

Encyclopædia of Religion and Ethics

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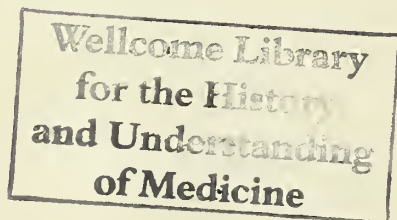
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LISTS OF ABBREVIATIONS

I. GENERAL

A.R. = Anno Hijrac (A.D. 622).
 Ak. = Akkadian.
 Alex. = Alexandrian.
 Amer. = American.
 Apoc. = Apocalypse, Apocalyptic.
 Apocr. = Apocrypha.
 Aq. = Aquila.
 Arab. = Arabic.
 Aram. = Aramaic.
 Arm. = Armenian.
 Ary. = Aryan.
 As. = Asiatic.
 Assyr. = Assyrian.
 AT = Altes Testament.
 AV = Authorized Version.
 AVm = Authorized Version margin.
 A.Y. = Anno Yazdagird (A.D. 639).
 Bab. = Babylonian.
 c. = *circa*, about.
 Can. = Canaanite.
 cf. = compare.
 ct. = contrast.
 D = Deuteronomist.
 E = Elohist.
 edd. = editions or editors.
 Egypt. = Egyptian.
 Eng. = English.
 Eth. = Ethiopic.
 EV, EVV = English Version, Versions.
 f. = and following verse or page.
 ff. = and following verses or pages.
 Fr. = French.
 Germ. = German.
 Gr. = Greek.
 H = Law of Holiness.
 Heb. = Hebrew.
 Hel. = Hellenistic.
 Hex. = Hexateuch.
 Himy. = Himyaritic.
 Ir. = Irish.
 Iran. = Iranian.

Isr. = Israelite.
 J = Jahwist.
 J' = Jehovah.
 Jerus. = Jerusalem.
 Jos. = Josephus.
 LXX = Septuagint.
 Min. = Minean.
 MSS = Manuscripts.
 MT = Massoretic Text.
 n. = note.
 NT = New Testament.
 Onk. = Onkelos.
 OT = Old Testament.
 P = Priestly Narrative.
 Pal. = Palestine, Palestinian.
 Pent. = Pentateuch.
 Pers. = Persian.
 Phil. = Philistine.
 Phoen. = Phœnician.
 Pr. Bk. = Prayer Book.
 R = Redactor.
 Rom. = Roman.
 RV = Revised Version.
 RVm = Revised Version margin.
 Sab. = Sabæan.
 Sam. = Samaritan.
 Sem. = Semitic.
 Sept. = Septuagint.
 Sin. = Sinaitic.
 Skr. = Sanskrit.
 Symm. = Symmachus.
 Syr. = Syriac.
 t. (following a number) = times.
 Talm. = Talmud.
 Targ. = Targum.
 Theod. = Theodotion.
 TR = Textus Receptus, Received Text.
 tr. = translated or translation.
 VSS = Versions.
 Vulg., Vg. = Vulgate.
 WH = Westcott and Hort's text.

II. BOOKS OF THE BIBLE

Old Testament.

Gn = Genesis.	Ca = Canticles.
Ex = Exodus.	Is = Isaiah.
Lv = Leviticus.	Jer = Jeremiah.
Nu = Numbers.	La = Lamentations.
Dt = Deuteronomy.	Ezk = Ezekiel.
Jos = Joshua.	Dn = Daniel.
Jg = Judges.	Hos = Hosea.
Ru = Ruth.	Jl = Joel.
1 S, 2 S = 1 and 2 Samnel.	Am = Amos.
1 K, 2 K = 1 and 2 Kings.	Ob = Obadiah.
1 Ch, 2 Ch = 1 and 2 Chronicles.	Jon = Jonah.
Ezr = Ezra.	Mic = Micah.
Neh = Nehemiah.	Nah = Nahum.
Est = Esther.	Hab = Habakkuk.
Job.	Zeph = Zephaniah.
Ps = Psalms.	Hag = Haggai.
Pr = Proverbs.	Zec = Zechariah.
Ec = Ecclesiastes.	Mal = Malachi.

Apocrypha.

1 Es, 2 Es = 1 and 2 Esdras.	To = Tobit.
	Jth = Judith.

Ad. Est = Additions to Esther.	Sus = Susanna.
Wis = Wisdom.	Bel = Bel and the Dragon.
Sir = Sirach or Ecclesiasticus.	Pr. Man = Prayer of Manasses.
Bar = Baruch.	1 Mac, 2 Mac = 1 and 2 Maccabees.
Three = Song of the Three Children.	

New Testament.

Mt = Matthew.	1 Th, 2 Th = 1 and 2 Thessalonians.
Mk = Mark.	1 Ti, 2 Ti = 1 and 2 Timothy.
Lk = Luke.	Tit = Titus.
Jn = John.	Philem = Philemon.
Ac = Acts.	He = Hebrews.
Ro = Romans.	Ja = James.
1 Co, 2 Co = 1 and 2 Corinthians.	1 P, 2 P = 1 and 2 Peter.
Gal = Galatians.	1 Jn, 2 Jn, 3 Jn = 1, 2, and 3 John.
Eph = Ephesians.	Jude.
Ph = Philippians.	Rev = Revelation.
Col = Colossians.	

III. FOR THE LITERATURE

1. The following authors' names, when unaccompanied by the title of a book, stand for the works in the list below.

- Baethgen = *Beiträge zur sem. Religionsgesch.*, 1888.
 Baldwin = *Dict. of Philosophy and Psychology*, 3 vols. 1901-05.
 Barth = *Nominalbildung in den sem. Sprachen*, 2 vols. 1889, 1891 (²1894).
 Benzinger = *Heb. Archäologie*, 1894.
 Brockelmann = *Gesch. d. arab. Litteratur*, 2 vols. 1897-1902.
 Bruns-Sachau = *Syr.-Röm. Rechtsbuch aus dem fünften Jahrhundert*, 1880.
 Budge = *Gods of the Egyptians*, 2 vols. 1903.
 Daremberg-Saglio = *Dict. des ant. grec. et rom.*, 1886-90.
 De la Saussaye = *Lehrbuch der Religionsgesch.*³, 1905.
 Denzinger = *Enchiridion Symbolorum*¹¹, Freiburg im Br., 1911.
 Deussen = *Die Philos. d. Upanishads*, 1899 [Eng. tr., 1906].
 Doughty = *Arabia Deserta*, 2 vols. 1888.
 Grimm = *Deutsche Mythologie*⁴, 3 vols. 1875-78, Eng. tr. *Teutonic Mythology*, 4 vols. 1882-88.
 Hamburger = *Realencyclopädie für Bibel u. Talmud*, i. 1870 (²1892), ii. 1883, suppl. 1886, 1891 f., 1897.
 Holder = *Altceltischer Sprachschatz*, 1891 ff.
 Holtzmann-Zöpfel = *Lexicon f. Theol. u. Kirchenwesen*², 1895.
 Howitt = *Native Tribes of S.E. Australia*, 1904.
 Jubainville = *Cours de Litt. celtique*, i.-xii., 1883 ff.
 Lagrange = *Études sur les religions sémitiques*², 1904.
 Lane = *An Arabic-English Lexicon*, 1863 ff.
 Lang = *Myth, Ritual, and Religion*², 2 vols. 1899.
 Lepsius = *Denkmäler aus Aegypten u. Aethiopien*, 1849-60.
 Lichtenberger = *Encyc. des sciences religieuses*, 1876.
 Lidzbarski = *Handbuch der nordsem. Epigraphik*, 1898.
 McCurdy = *History, Prophecy, and the Monuments*, 2 vols. 1894-96.
 Muir = *Orig. Sanscrit Texts*, 1858-72.
 Müss-Arnolt = *A Concise Dict. of the Assyrian Language*, 1894 ff.
 Nowack = *Lehrbuch d. heb. Archäologie*, 2 vols. 1894.
 Pauly-Wissowa = *Realencyc. der classischen Altertumswissenschaft*, 1894 ff.
 Perrot-Chipiez = *Hist. de l'art dans l'antiquité*, 1881 ff.
 Preller = *Römische Mythologie*, 1858.
 Réville = *Religion des peuples non-civilisés*, 1883.
 Riehm = *Handwörterbuch d. bibl. Altertums*², 1893-94.
 Robinson = *Biblical Researches in Palestine*², 1856.
 Roscher = *Lex. d. gr. u. röm. Mythologie*, 1884 ff.
 Schaff-Herzog = *The New Schaff-Herzog Encyclopedia of Religious Knowledge*, 1908 ff.
 Schenkel = *Bibel-Lexicon*, 5 vols. 1869-75.
 Schürer = *GJV*³, 3 vols. 1898-1901 [*HJP*, 5 vols. 1890 ff.].
 Schwally = *Leben nach dem Tode*, 1892.
 Siegfried-Stade = *Heb. Wörterbuch zum AT*, 1893.
 Smend = *Lehrbuch der alttest. Religionsgesch.*², 1899.
 Smith (G. A.) = *Historical Geography of the Holy Land*⁴, 1897.
 Smith (W. R.) = *Religion of the Semites*², 1894.
 Spencer (H.) = *Principles of Sociology*³, 1885-96.
 Spencer-Gillen^a = *Native Tribes of Central Australia*, 1899.
 Spencer-Gillen^b = *Northern Tribes of Central Australia*, 1904.
 Swete = *The OT in Greek*, 3 vols. 1893 ff.
 Tylor (E. B.) = *Primitive Culture*³, 1891 [⁴1903].
 Ueberweg = *Hist. of Philosophy*, Eng. tr., 2 vols. 1872-74.
 Weber = *Jüdische Theologie auf Grund des Talmud u. verwandten Schriften*², 1897.
 Wiedemann = *Die Religion der alten Aegypter*, 1890 [Eng. tr., revised, *Religion of the Anc. Egyptians*, 1897].
 Wilkinson = *Manners and Customs of the Ancient Egyptians*, 3 vols. 1878.
 Zunz = *Die gottesdienstlichen Vorträge der Juden*², 1892.

2. Periodicals, Dictionaries, Encyclopædias, and other standard works frequently cited.

- AA = Archiv für Anthropologie.
 AAOJ = American Antiquarian and Oriental Journal.
 ABAW = Abhandlungen d. Berliner Akad. d. Wissenschaften.
 AE = Archiv für Ethnographie.
 AEG = Assyr. and Eng. Glossary (Johns Hopkins University).
 AGG = Abhandlungen der Göttinger Gesellschaft der Wissenschaften.
 AGPh = Archiv für Geschichte der Philosophie.
 AHR = American Historical Review.
 AHT = Ancient Hebrew Tradition (Hommel).
 AJPh = American Journal of Philology.
 AJP = American Journal of Psychology.
 AJRPE = American Journal of Religious Psychology and Education.
 AJSL = American Journal of Semitic Languages and Literature.
 AJTh = American Journal of Theology.
 AMG = Annales du Musée Guimet.
 APES = American Palestine Exploration Society.
 APF = Archiv für Papyrussforschung.
 AR = Anthropological Review.
 ARW = Archiv für Religionswissenschaft.
 AS = Acta Sanctorum (Bollandus).
 ASG = Abhandlungen der Sächsischen Gesellschaft der Wissenschaften.
 ASoc = L'Année Sociologique.
 ASWI = Archaeological Survey of W. India.
 AZ = Allgemeine Zeitung.
 BAG = Beiträge zur alten Geschichte.
 BASS = Beiträge zur Assyriologie u. sem. Sprachwissenschaft (edd. Delitzsch and Haupt).
 BCH = Bulletin de Correspondance Hellénique.
 BE = Bureau of Ethnology.
 BG = Bombay Gazetteer.
 BJ = Bellum Judaicum (Josephus).
 BL = Bampton Lectures.
 BLE = Bulletin de Littérature Ecclésiastique.
 BOR = Bab. and Oriental Record.
 BS = Bibliotheca Sacra.
 BSA = Annual of the British School at Athens.
 BSAA = Bulletin de la Soc. archéologique à Alexandrie.
 BSAL = Bulletin de la Soc. d'Anthropologie de Lyon.
 BSAP = Bulletin de la Soc. d'Anthropologie, etc., Paris.
 BSG = Bulletin de la Soc. de Géographie.
 BTS = Buddhist Text Society.
 BW = Biblical World.
 BZ = Biblische Zeitschrift.

- CAIBL*=Comptes rendus de l'Académie des Inscriptions et Belles-Lettres.
CBTS=Calcutta Buddhist Text Society.
CE=Catholic Encyclopedia.
CF=Childhood of Fiction (MacCulloch).
CGS=Cults of the Greek States (Farnell).
CI=Census of India.
CIA=Corpus Inscript. Atticarum.
CIE=Corpus Inscript. Etruscarum.
CIG=Corpus Inscript. Graecarum.
CIL=Corpus Inscript. Latinarum.
CIS=Corpus Inscript. Semiticarum.
COT=Cuneiform Inscriptions and the OT [Eng. tr. of *KAT*²; see below].
CR=Contemporary Review.
CeR=Celtic Review.
CLR=Classical Review.
CQR=Church Quarterly Review.
CSEL=Corpus Script. Eccl. Latinorum.
DAC=Dict. of the Apostolic Church.
DACL=Dict. d'Archéologie chrétienne et de Liturgie (Cabrol).
DB=Dict. of the Bible.
DCA=Dict. of Christian Antiquities (Smith-Cheetham).
DCB=Dict. of Christian Biography (Smith-Wace).
DCG=Dict. of Christ and the Gospels.
DI=Dict. of Islam (Hughes).
DNB=Dict. of National Biography.
DPhP=Dict. of Philosophy and Psychology.
DWAW=Denkschriften der Wiener Akad. der Wissenschaften.
EBi=Encyclopædia Biblica.
EBr=Encyclopædia Britannica.
EEFM=Egyp. Explor. Fund Memoirs.
EI=Encyclopædia of Islâm.
ERE=The present work.
Exp=Expositor.
ExpT=Expository Times.
FHG=Fragmenta Historicorum Græcorum (coll. C. Müller, Paris, 1835).
FL=Folklore.
FLJ=Folklore Journal.
FLR=Folklore Record.
GA=Gazette Archéologique.
GB=Golden Bough (Frazer).
GGA=Göttingische Gelehrte Anzeigen.
GGN=Göttingische Gelehrte Nachrichten (Nachrichten der königl. Gesellschaft der Wissenschaften zu Göttingen).
GIAP=Grundriss d. Indo-Arischen Philologie.
GrP=Grundriss d. Iranischen Philologie.
GJV=Geschichte des jüdischen Volkes.
GVI=Geschichte des Volkes Israel.
HAI=Handbook of American Indians.
HDB=Hastings' Dict. of the Bible.
HE=Historia Ecclesiastica.
HGHL=Historical Geography of the Holy Land (G. A. Smith).
HI=History of Israel.
HJ=Hibbert Journal.
HJP=History of the Jewish People.
HL=Hibbert Lectures.
HN=Historia Naturalis (Pliny).
HWB=Handwörterbuch.
IA=Indian Antiquary.
ICC=International Critical Commentary.
ICO=International Congress of Orientalists.
ICR=Indian Census Report.
IG=Inscript. Græcæ (publ. under auspices of Berlin Academy, 1873 ff.).
IGA=Inscript. Græcæ Antiquissimæ.
IGI=Imperial Gazetteer of India² (1885); new edition (1908-09).
IJE=International Journal of Ethics.
ITL=International Theological Library.
JA=Journal Asiatique.
JAFL=Journal of American Folklore.
JAI=Journal of the Anthropological Institute.
JAOS=Journal of the American Oriental Society.
JASB=Journal of the Anthropological Society of Bombay.
JASBe=Journ. of As. Soc. of Bengal.
JBL=Journal of Biblical Literature.
JBTS=Journal of the Buddhist Text Society.
JD=Journal des Débats.
JDTh=Jahrbücher f. deutsche Theologie.
JE=Jewish Encyclopedia.
JGOS=Journal of the German Oriental Society.
JHC=Johns Hopkins University Circulars.
JHS=Journal of Hellenic Studies.
JLZ=Jenäer Literaturzeitung.
JPh=Journal of Philology.
JPTTh=Jahrbücher für protestantische Theologie.
JPTS=Journal of the Pali Text Society.
JQR=Jewish Quarterly Review.
JRAI=Journal of the Royal Anthropological Institute.
JRAS=Journal of the Royal Asiatic Society.
JRASBo=Journal of the Royal Asiatic Society, Bombay branch.
JRASC=Journal of the Royal Asiatic Society, Ceylon branch.
JRASK=Journal of the Royal Asiatic Society, Korean branch.
JRGS=Journal of the Royal Geographical Society.
JRS=Journal of Roman Studies.
JThSt=Journal of Theological Studies.
*KAT*²=Die Keilinschriften und das AT² (Schrader), 1833.
*KAT*³=Zimmern-Winckler's ed. of the preceding (really a totally distinct work), 1903.
KB or *KIB*=Keilinschriftliche Bibliothek (Schrader), 1889 ff.
KGF=Keilinschriften und die Geschichtsforschung, 1878.
LCEI=Literarisches Centralblatt.
LOPh=Literaturblatt für Oriental. Philologie.
LOT=Introduction to Literature of OT (Driver).
LP=Legend of Perseus (Hartland).
LSSt=Leipziger sem. Studien.
M=Mélusine.
MAIBL=Mémoires de l'Acad. des Inscriptions et Belles-Lettres.
MBAW=Monatsbericht d. Berliner Akad. d. Wissenschaften.
MGH=Monumenta Germaniæ Historica (Pertz).
MGJV=Mittheilungen der Gesellschaft für jüdische Volkskunde.
MGWJ=Monatsschrift für Geschichte und Wissenschaft des Judentums.
MI=Origin and Development of the Moral Ideas (Westermarck).
MNDPV=Mittheilungen u. Nachrichten des deutschen Palästina-Vereins.
MR=Methodist Review.
MVG=Mittheilungen der vorderasiatischen Gesellschaft.
MWJ=Magazin für die Wissenschaft des Judentums.
NBAC=Nuovo Bullettino di Archeologia Cristiana.
NC=Nineteenth Century.
NHWB=Neuhebräisches Wörterbuch.
NINQ=North Indian Notes and Queries.
NKZ=Neue kirchliche Zeitschrift.
NQ=Notes and Queries.
NR=Native Races of the Pacific States (Bancroft).
NTZG=Neutestamentliche Zeitgeschichte.
OED=Oxford English Dictionary.
OLZ=Orientalische Literaturzeitung.
OS=Onomastica Sacra.
OTJC=Old Testament in the Jewish Church (W. R. Smith).
OTP=Oriental Translation Fund Publications.
PAOS=Proceedings of American Oriental Society.

<i>PASB</i> = Proceedings of the Anthropological Soc. of Bombay.	<i>SBAW</i> = Sitzungsberichte d. Berliner Akademie d. Wissenschaften.
<i>PB</i> = Polychrome Bible (English).	<i>SBB</i> = Sacred Books of the Buddhists.
<i>PBE</i> = Publications of the Bureau of Ethnology.	<i>SBE</i> = Sacred Books of the East.
<i>PC</i> = Primitive Culture (Tylor).	<i>SBOT</i> = Sacred Books of the OT (Hebrew).
<i>PEFM</i> = Palestine Exploration Fund Quarterly Memoirs.	<i>SDB</i> = Single-vol. Dict. of the Bible (Hastings).
<i>PEFSt</i> = Palestine Exploration Fund Statement.	<i>SK</i> = Studien und Kritiken.
<i>PG</i> = Patrologia Græca (Migne).	<i>SMA</i> = Sitzungsberichte d. Münchener Akademie.
<i>PJB</i> = Preussische Jahrbücher.	<i>SSGW</i> = Sitzungsberichte d. Kgl. Sächs. Gesellsch. d. Wissenschaften.
<i>PL</i> = Patrologia Latina (Migne).	<i>SWAW</i> = Sitzungsberichte d. Wiener Akademie d. Wissenschaften.
<i>PNQ</i> = Punjab Notes and Queries.	<i>TAPA</i> = Transactions of American Philological Association.
<i>PR</i> = Popular Religion and Folklore of N. India (Crooke).	<i>TASJ</i> = Transactions of the Asiatic Soc. of Japan.
<i>PRE</i> ³ = Prot. Realencyclopädie (Herzog-Hauck).	<i>TC</i> = Tribes and Castes.
<i>PRR</i> = Presbyterian and Reformed Review.	<i>TES</i> = Transactions of Ethnological Society.
<i>PRS</i> = Proceedings of the Royal Society.	<i>ThLZ</i> = Theologische Literaturzeitung.
<i>PRSE</i> = Proceedings Royal Soc. of Edinburgh.	<i>ThT</i> = Theol. Tijdschrift.
<i>PSBA</i> = Proceedings of the Society of Biblical Archaeology.	<i>TRHS</i> = Transactions of Royal Historical Society.
<i>PTS</i> = Pali Text Society.	<i>TRSE</i> = Transactions of Royal Soc. of Edinburgh.
<i>RA</i> = Revue Archéologique.	<i>TS</i> = Texts and Studies.
<i>RAnth</i> = Revue d'Anthropologie.	<i>TSBA</i> = Transactions of the Soc. of Biblical Archaeology.
<i>RAS</i> = Royal Asiatic Society.	<i>TU</i> = Texte und Untersuchungen.
<i>RAssyr</i> = Revue d'Assyriologie.	<i>WAI</i> = Western Asiatic Inscriptions.
<i>RB</i> = Revue Biblique.	<i>WZKM</i> = Wiener Zeitschrift f. Kunde des Morgenlandes.
<i>RBEW</i> = Reports of the Bureau of Ethnology (Washington).	<i>ZA</i> = Zeitschrift für Assyriologie.
<i>RC</i> = Revue Critique.	<i>ZA</i> = Zeitschrift für ägypt. Sprache u. Altertumswissenschaft.
<i>RCel</i> = Revue Celtique.	<i>ZATW</i> = Zeitschrift für die alttest. Wissenschaft.
<i>RCh</i> = Revue Chrétienne.	<i>ZCK</i> = Zeitschrift für christliche Kunst.
<i>RDM</i> = Revue des Deux Mondes.	<i>ZCP</i> = Zeitschrift für celtische Philologie.
<i>RE</i> = Realencyclopädie.	<i>ZDA</i> = Zeitschrift für deutsches Altertum.
<i>REG</i> = Revue des Études Grecques.	<i>ZDMG</i> = Zeitschrift der deutschen morgenländischen Gesellschaft.
<i>REG</i> = Revue Égyptologique.	<i>ZDPV</i> = Zeitschrift des deutschen Palästina-Vereins.
<i>REJ</i> = Revue des Études Juives.	<i>ZE</i> = Zeitschrift für Ethnologie.
<i>REth</i> = Revue d'Ethnographie.	<i>ZKF</i> = Zeitschrift für Keilschriftforschung.
<i>RGG</i> = Die Religion in Geschichte und Gegenwart.	<i>ZKG</i> = Zeitschrift für Kirchengeschichte.
<i>RHLR</i> = Revue d'Histoire et de Littérature religieuses.	<i>ZKT</i> = Zeitschrift für kathol. Theologie.
<i>RHR</i> = Revue de l'Histoire des Religions.	<i>ZKWL</i> = Zeitschrift für kirchl. Wissenschaft und kirchl. Leben.
<i>RM</i> = Revue du monde musulman.	<i>ZM</i> = Zeitschrift für die Mythologie.
<i>RN</i> = Revue Numismatique.	<i>ZNTW</i> = Zeitschrift für die neuest. Wissenschaft.
<i>RP</i> = Records of the Past.	<i>ZPhP</i> = Zeitschrift für Philosophie und Pädagogik.
<i>RPh</i> = Revue Philosophique.	<i>ZTK</i> = Zeitschrift für Theologie und Kirche.
<i>RQ</i> = Römische Quartalschrift.	<i>ZVK</i> = Zeitschrift für Volkskunde.
<i>RS</i> = Revue sémitique d'Épigraphie et d'Hist. ancienne.	<i>ZVRW</i> = Zeitschrift für vergleichende Rechtswissenschaft.
<i>RSA</i> = Recueil de la Soc. archéologique.	<i>ZWT</i> = Zeitschrift für wissenschaftliche Theologie.
<i>RSI</i> = Reports of the Smithsonian Institution.	
<i>RTAP</i> = Recueil de Travaux relatifs à l'Archéologie et à la Philologie.	
<i>RTP</i> = Revue des traditions populaires.	
<i>RThPh</i> = Revue de Théologie et de Philosophie.	
<i>RTr</i> = Recueil de Travaux.	
<i>RVV</i> = Religionsgeschichtliche Versuche und Vorarbeiten.	
<i>RWB</i> = Realwörterbnch.	

[A small superior number designates the particular edition of the work referred to, as *KAT*², *LOT*⁶, etc.]

the right ear)¹—and they were also used in Mithraism (branding the initiate on the forehead).² These marks secured the recognition of the initiate by the divinity.

8. Postures of the head.—Almost universally, at worship, before a sacred object, or in presence of a superior, the head is reverently bowed, or the person bends down or prostrates himself to the ground, touching it with the forehead. These postures are found among many savages and in all of the higher religions. But sometimes also the head is uplifted, the petitioner looking upwards to heaven—a posture which usually accompanies the lifting of the hands in prayer. In many semi-religious or magical rites the head is directed to be averted, as it is considered dangerous to see supernatural personages, sacred objects, and all that belongs to a supernatural plane (Gn 19^{17.26}; *ERE* iv. 654³).³ Various gestures of the head have definite significations among most peoples. The head is hung in shame, or raised in pride, or moved up and down or from side to side in token of assent or negation, or wagged in token of contempt (La 2¹⁵, Mt 27³⁹), etc. As a sign of their complete subjection a conqueror placed his foot on the head of his enemies (Ps 110¹, 1 Co 15²⁵).⁴ Hence among savages it is often a sign of respectful submission to place a superior's foot on one's neck or head.⁵

9. Of all parts of the body the skull tends to exhibit the largest proportion of clearly defined variations. As related to the brain as well as to the organs of mastication, and because of its differences in dimensions and in form, it affords an excellent index of racial affinities. Hence the science of craniology, the measurements and characteristics of the skull, has thrown great light not only upon the races of pre-historic times as revealed by their remains, and their relation to existing races, but also upon the affinities of present-day peoples⁶ (see ANTHROPOLOGY).

10. Deformation of the head in various ways, of which four principal types are distinguished, is practised by many peoples. The infant's head is submitted to the continued application of boards, bandages, stiff caps, and the like, until the deformation is finally attained. This practice is common among American Indian tribes, in the South Sea Islands, in Asia Minor, and sporadically in Europe, e.g. the 'Toulousaine' head of different parts of France.⁷

LITERATURE.—This is given in the footnotes.

J. A. McCULLOCH.

HEAD-DRESS.—See CROWN.

HEAD-HUNTING.—See AUSTRALASIA, HEAD.

HEALING.—See DISEASE AND MEDICINE.

HEALTH AND GODS OF HEALING (Greek).—I. THE RELATIONS BETWEEN SACRED AND PROFANE MEDICINE IN ANTIQUITY.—As long as religion maintains an inherent connexion with the entire intellectual development of the age, so long does medicine continue to bear the impress of the religious factor. In the absence of the occult element from the surgical practice of the *Iliad*, we shall therefore hardly venture, with Gomperz (*Gr.*

Denker, i. 224 [Leipzig, 1896]), to describe a 'morning-blush of the Illumination.' For one thing, the significance of that absence is discounted by the fact that in the *Odyssey*, a product of the same stage of culture as the *Iliad*, the magic word is employed in the treatment of wounds (*Od.* xix. 457); and for another, the surgical art, just because the injuries it deals with are patent to the eye, and may be healed by the skilled hand, occupied a distinct position within the sphere of medicine. This is seen even in the legal enactments of ancient Babylonia, in which the healer of wounds is put alongside of the veterinary surgeon, the architect, and other artisans, while internal medicine is not mentioned at all (see below). The absence of exorcism from the surgical practice of the *Iliad* could be regarded as a symptom of the Ionic 'spirit of light' only if that epic, in its references to disease, made no mention of magic remedies at all. In point of fact, however, the warriors who deal so rationally with wounds are completely at a loss when confronted with the pestilence sent by Apollo, and have recourse to supernatural means of healing—the consultation of priests, seers, and dream-readers (*Il.* i. 63), purifications, prayers, and sacrifices (442 ff.). In the *Odyssey* likewise the illness of individuals is regarded as sent by the gods (v. 396, ix. 411), and from the gods alone is the remedy to be procured (v. 397). The prevalence of theurgic medicine in the Homeric age must thus be recognized as a fact beyond question.

Then the ever-recurring employment of religious expedients against the onset of epidemics in later times, and the vogue enjoyed for centuries by temples of healing, show us how long the power of magic held its ground in the sphere of therapeutics. It is also a significant fact that Pindar, when enumerating the subjects which Asklepios learned from Cheiron (see below, II. A. 6), does not shrink from co-ordinating exorcism with external and internal medicine. Even Sophocles, whose view of *ἐπιφάτα*, as expressed by Ajax (*Aj.* 582), is read by J. Hirschberg as a condemnation of them (*Gesch. d. Augenheilkunde*, Leipzig, 1905, p. 55; he might also have adduced *Trachin.* 1001), was actually the priest of the healing hero Amynos (II. B. 11), and, as such, successfully strove to secure the naturalization of Asklepios, the bestower of dream-oracles, in Athens.

A very different problem is raised when we ask whether the predominance of the supranaturalistic element did not act as an obstacle to practical progress in religious medicine, or whether genuine medical knowledge might not develop even under such conditions. In order to answer this question, we must turn to the two civilized peoples who practised the healing art prior to the Greeks.

(a) To the Babylonians a science of medicine free from the occult was always a thing unknown. At the first glance, indeed, it might seem as if at a remote period popular beliefs were assailed as mere superstition by certain outstanding rulers, but on a closer inspection this view proves to be fallacious. The ancient Sumerian *patesi* (city-king) of Lagash, Gudea, whose reign is now dated c. 2450 (A. Ungnad) or 2350 B.C. (E. Meyer), certainly says, in his report about the building of the temple of Ningirsu, that he has 'expelled the dreadful sorcerers, the [what follows is unintelligible] . . . from the city' (Statue B 3, 15 ff., as in Thureau-Dangin, *Die sumer. u. akkad. Königsinschr.*, Leipzig, 1907, p. 69; cf. Cylinder A, 13 f., p. 103). But to speak of him as on that account the earliest champion of civilization in history (J. Jeremias, *Moses u. Hammurabi*, Leipzig, 1903, p. 40, n. 3) is a misapprehension. Gudea was, in fact, anything but a rationalist. The inscriptions of his statues and cylinders record little else than his exertions in

¹ *Iren.* i. 25. 6.

² *Tert. Præser.* 40.

³ Cf. Grimm, 493, 1295; Homer, *Odyssey*, v. 350.

⁴ Wilkinson, iii. 403; Frazer, *Adonis*, 52 (Hittite).

⁵ M. Laird and R. A. K. Oldfield, *Exped. into Interior of Africa*, London, 1837, i. 192; J. R. Forster, *Observations during a Voyage round the World*, do. 1777, p. 361 (Tonga).

⁶ J. Deniker, *Races of Man*, London, 1900, p. 53 ff.; G. Sergi, *The Mediterranean Race*, do. 1901.

⁷ See P. Topinard, *Éléments d'anthropologie*, Paris, 1885, p. 744; A. Hrdlicka, in Hodge, *H.A.I.*, Washington, 1907 [50 *Bull. BE*], pt. I, s.v. 'Artificial Head Deformation'; *NR* i. and ii. passim; Turner, *Samoa*, 80.

connexion with the temples of the gods, and reveal him as a true priest-king. For the building of the aforesaid temple of Ningirsu, he asks that goddess for a special revelation (cf. his dream, on Cyl. A, 27 ff., Thureau-Dangin, p. 91 ff.), while for his administrative proceedings he resorts to omens of various kinds, as also, according to Jastrow (*Die Religion der Bab. u. Assy.*, Giessen, 1902-05, ii. 273), to hepatoscopy. When a ruler of this type makes war upon sorcerers, it will hardly be in the interests of enlightenment.

The same holds good of Hammurabi of Babylon, who reigned some centuries later. By § 2 of his code of laws, a charge of having practised sorcery is to be submitted to a divine ordeal which involves the death of either the accuser or the accused (cf. Ungnad's tr. in Gressmann, *Altorient. Texte*, Tübingen, 1909, p. 143). Here again Jeremias recognizes the measures of an enlightened monarch against the superstitions of his day. But, while religion has indeed no place in the legislation itself, it is certainly prominent enough in the epilogue, where the king calls upon the gods to chastise the transgressors with various calamities, such as serious illness, evil Ashakku (the demon of consumption or fever), painful injury, *the nature of which is unknown to the doctor*, and which he cannot relieve with bandages. In §§ 215-221 the code applies the strictest provisions of the *jus talionis* to the doctor; but here the doctor is in reality the surgeon, and is not concerned with internal diseases, which, according to Hammurabi's ideas, are induced by demons, and can be combated only by religious means. Contemporary inscriptions show that by the time of Hammurabi the divining priests (*bārū*) had been formed into an organized gild; and this was presumably the case also with the exorcizing priests (*ashipu*), whose function it was to dislodge the demons of disease (cf. Weber, 'Dämonen-beschwörung bei d. Bab. u. Assy.', in *Der alte Orient*, vii. [1905] 4, pp. 5 and 7).¹

Thus, as sorcery and exorcism were recognized elements in the official religion of Mesopotamia, the repressive measures of Gudea and Hammurabi could apply only to those illegal practices by which persons endowed with occult powers—sorcerers and witches—caused injury to others, and against which the priesthood in its official capacity fought with magic devices of its own (as found in the 'Maklu' inscriptions). What the priests thus did by magic, the two monarchs sought to do by law, and, accordingly, the object of their attack is not superstition as such, but what was known in the Middle Ages as 'black magic.' Hence, as the belief that disease was caused by demons was an essential feature of Babylonian religion, Babylonian therapeutics must also have borne a supranaturalistic character.

(b) The Egyptians, even by the period of the *Odyssey* (iv. 227 ff.), had carried the fame of their medical proficiency beyond the confines of their own country; and this fame is justified by the relevant portions of their extant literature. It would seem, however, as if an error had recently crept into the critical investigation of this literature. Thus, from the fact that two documents of the Middle Empire—fragments respectively of a gynaecological and a veterinary papyrus, and both from Kahun—deal only with symptoms, diagnosis, and therapeutics (F. v. Oefele, in Neuburger-Pagel, *Gesch. d. Medizin*, i. [Jena, 1901] 75), while

the Ebers Papyrus, compiled from older writings during the XVIIIth dynasty, and its nearly contemporary counterpart, the Hearst Medical Papyrus (ed. Reisner, 1905), frequently supplement the medical recipes by magic formulae, von Oefele (*Der alte Orient*, iv. [1902] 2, p. 25) and H. Schneider (*Kultur u. Denken d. alten Aegypten*, Leipzig, 1907, p. 317 ff.) infer that Egyptian medicine was at first purely empirical, and resorted to magic only in the period of the New Empire and under Babylonian influence. But is this not too bold a conclusion to draw from such scanty data? The gynaecological text in question consists of only three columns, while the Ebers Papyrus comprises one hundred and ten pages; in the latter, moreover, the incantations are met with sporadically, and large portions of the text have none at all. Thus the absence of incantations from the Kahun fragment may be merely fortuitous. In a word, that a people with so intense a belief in the supernatural as the Egyptians—a people whose cult of the dead was completely permeated by magic even in the Ancient Empire—cultivated a purely rational medicine the present writer finds it impossible to believe.

We turn now to the question how far those two civilized peoples of antiquity, with their marked leaning towards the occult, succeeded in making progress in the science and art of healing. Modern writers on medicine have shown that the Egyptian doctrine of the vessels (*metu*) was a real contribution to science, and that the Egyptian pharmacy furnishes materials of considerable value. But the Babylonian medicine likewise, debased by the ritual of exorcism and dependent upon oracles though it was, recognizes, as has been shown by F. Kuchler in his valuable *Beiträge zur Kenntnis d. assyr.-bab. Medizin* (Leipzig, 1904), the use of rational remedies, employs the injection (Kuchler, p. 39, l. 44) and the cataplasm (*ib.* 39, 36, etc.), and gives directions as to diet (*ib.* 7, 30, 69); and, according to Oefele (in Kuchler, p. 65), the squatting position it prescribes for colic (*ib.* 3, 11, 13) does in reality afford great relief.

Alike in the Nile valley and in Mesopotamia, therefore, the healing art was a combination of the occult and the rational, and this peculiar system of medicine exercised an influence upon the Greeks at a very early period. The Egyptian doctrine of *metu* survives in the Greek theory of 'humours' (Schneider, *op. cit.* 325), the Egyptian pharmacy in that of Greece; and a striking illustration of such survival is found in the fact that, as demonstrated by Le Page Renouf (*ZA* xi. [1873] 123), the diagnosis of pregnancy in the 'Hippocratic' treatise *περί ἀφόρων*—probably written by a Cnidian—is identical with that found in the Brugsch Papyrus. How this Egyptian diagnosis made its way to the Cnicians may be explained by the fact that, according to Diogenes Laertius (viii. 87), the Cnidian mathematician and physician Eudoxos spent fifteen months with the medical priests of Heliopolis in the reign of Nektanebos (382-364 B.C.); and Eudoxos would certainly not be the first of the Greeks to avail himself of such an experience. The avenues by which Babylonian medicine reached the Greeks have not yet been definitely ascertained; but the present writer is convinced that the practice of *incubation*, i.e. sleeping in a temple as a means of healing, which is of great importance in the religious medicine of the Greeks, was an importation from Babylonia. H. Magnus (*Abh. zur Gesch. d. Medizin*, i. [Breslau, 1902] 6 ff.) maintains, it is true, that incubation was common in Egypt from the earliest times; but the present writer has never succeeded in finding any mention of it in ancient Egyptian sources. In all probability, the practice was introduced into Egypt through the medium of the Sarapis worship

¹ A parallel to Gudea and Hammurabi in this respect may be found in Saul, king of Israel, who, in conformity with Ex 22:18 and Lv 19:27, expelled wizards and diviners from the country, but in his own hour of need sought counsel of the forbidden craft (the witch of Endor, 1 S 28:7; cf. v. 3). Divination, however, was forbidden among the Israelites, not as a harmful superstition, but as a Canaanite practice (cf. E. Meyer, *Gesch. d. Altentums*, Stuttgart, 1884-1901, i. § 313).

founded by Ptolemy I., and was shortly thereafter transferred to the cult of Isis. Sarapis—the subject of much discussion—is, however, as C. F. Lehmann-Haupt has shown (II. A. 18), simply the god Ea of Eridu under his customary by-name of *sar apsi* ('king of the watery deep'), the supreme healing god of the Babylonians (Jastrow, *op. cit.* i. 294 ff.). In the sanctuary of Ea at Babylon—the edifice which Greek sources call *Σαραπίειον*—the rite of incubation was performed on behalf of the dying Alexander by several of his generals. The theory that Mesopotamia was the cradle of incubation is warranted also by the fact that in that region dream-oracles were sought after for all emergencies, and especially for disease (Jastrow, i. 367 ff.), from the earliest times. Unfortunately, we have as yet no work dealing with the ritual prescribed; and this is all the more to be regretted in view of the important rôle played by *dream-reading*. Jastrow's work has so far only reached the discussion of the oil-oracle; the still unpublished matter relating to dream-oracles for healing purposes is noted in Bezold's Catalogue of the Kouyunjik Collection, v. (1899) nos. 2140 ('omens, including medical prescriptions') and 2143 ('omens derived from events which seem to occur in dreams'). That incubation among the Babylonians and Assyrians was an institution with well-defined rites is shown by an incidental reference in the annals of Assurbanipal (ed. Jensen, *KIB* ii. [1890] 187), where a dreamer is said to have lain down towards the end of the night, in order to obtain an oracle on the king's behalf (cf. *ib.* 201). The Greek practice of incubation, however, also exhibits the two features here indicated, viz. *incubation on behalf of another* (cf. II. A. 15 and 17, below), and the *preference for a time towards morning*—'as the soul is then free from the effects of material sustenance' (Philostr. *Vita Apollon.* ii. 36; cf. Artemidor. i. 7). Plutarch (*Septem sap. conv.* 15) tells us that incubation was an ancient Greek practice, and the reference of the *Iliad* (xvi. 235) to the Dodonian Selloi, the *ὑποφῆται χαμαιῖναι* of Zeus, may be regarded as the earliest witness to it (so Welcker, *Kleine Schriften*, iii. [1850] 90, and Dümmler, *Philol.* lvi. [1897] 6). The naturalization of a Bab. practice in Greece at so early a period is not inconceivable, as another passage of the *Iliad* (xiv. 201, 246), in its striking representation of Okeanos and Tethys as primitive forces (cf. the early Orphic theogony, in Plat. *Cratyl.* 402 B), shows dependence on Bab. cosmogony (P. Jensen, *Kosmologie der Babylonier*, Strassburg, 1890, p. 244). Incubation would seem to have reached the Greeks by way of Lydia; thus, in Assurbanipal's annals (*KIB* ii. 173), a dream vouchsafed by the god Assur to Gyges is mentioned (cf. Jensen, in Thürler, *Pergamos*, Leipzig, 1888, p. 413), while in the valley of the Mæander there were several incubation-shrines of the subterranean gods, one of them being the Plutonion, near Nysa, the ceremonies of which were a reflexion of the Bab. practice (II. A. 17, below). Mention should also be made of the curious affinity between the Bab. haruspicy (Jastrow, ii. 213 ff.) and the Etruscan—a correspondence dealt with most recently by G. Körte (*Röm. Mitt.* xx. [1905] 348 ff.) in connexion with the bronze liver of Piacenza (see ETRUSCAN RELIGION, vol. v. pp. 533, 537). Here, again, we learn that we are but beginning to realize the remarkable religious influences which streamed from Mesopotamia to the West.

If the religious medicine of the older civilized peoples thus made its influence felt among the Greeks, the question arises whether its further development, after its settlement upon Greek soil, was essentially upon the same lines as before, i.e. whether the fusion of religion and medical em-

piricism can be traced also in the therapeutic practice of the Greek sanctuaries. While this, notwithstanding the ridicule poured upon incubation-shrines by Aristophanes in the *Ploutos*, and obviously also in the *Amphiaraios*, might have been confidently taken for granted until lately, the discovery of the Epidaurian stelæ recording the miraculous cures (*ἰάματα*) of Asklepios (as redacted about the end of the 4th cent. B.C.) has brought about a defection from this view, and the majority of modern investigators stigmatize these sanctuaries as hives of priestly chicanery and senile superstition. The latest discussion of the question (S. Herrlich, 'Antike Wunderkuren,' in *Progr. des Humboldt-Gymnas. zu Berlin*, 1911) comes eventually to the same negative result. The present writer, however, after renewed consideration of the subject, cannot but adhere, in essentials, to the earlier standpoint, as set forth in Pauly-Wissowa, ii. 1686 ff.

Arguing from the difference between the contents of the Epidaurian *iamata*-stelæ and the condition of medical practice in the Imperial period, P. Kavvadias (in his *Fouilles d'Epidauré*, Athens, 1893, p. 115, in the *Ἔργον τοῦ Ἀσκληπιοῦ*, 1900, p. 267 ff., in the *Mélanges Perrot*, 1902, p. 42, and, finally, at the Archaeological Congress in Athens, *Comptes Rendus*, 1905, p. 278 ff.) has come to the conclusion that in the Greek period the curative procedure of the Asklepieia consisted entirely of miraculous acts of the god, after the style of the *iamata*, while in the Roman period, in consequence of the institution of dream-shrines, and the therapeutic methods based thereon, it received an infusion of rationality. But the inference is by no means beyond dispute. To begin with, it would be strange indeed that the Asklepieia of the most flourishing period of the Greek world should successfully resist the intrusion of rational procedure, while, in a period of growing superstition and craving for the miraculous, they should open their doors to natural remedies.¹ Kavvadias bases his theory on the Epidaurian *iamata*, but exaggerates their importance. In Pauly-Wissowa (*loc. cit.*) the present writer had pointed out that the *iamata*—according to which, e.g., persons with a vacant eye-socket incubate, and leave the shrine with a seeing eye—are not historical documents, but merely a compilation for the gratification of credulous minds, and that none of the individuals said to have been cured by the god can be historically traced. Wilhelm (*Jahrb. d. österr. archäol. Inst.* iii. [1900] 40) has certainly sought to identify Arymbas, an Epirot named in stele ii. no. 31, with a Molossian chief of the period in which the *iamata* were redacted, but in that case this particular *iamata* would be severed from the group as a whole. The Greeks had, in point of fact, a great store of legends about the cures and resuscitations of Asklepios in the mythical age (cf. Pauly-Wissowa, ii. 1653 f.), and one of these miracles—the raising of Hippolytus to life—was extolled upon a stele bearing an epigram in the Epidaurian *hieron* (Paus. ii. 27. 4). Our redaction of the *iamata*, then, really preserves the substance of these tales of the marvellous in a pseudo-historical form, its object being to convince the credulous that the immediate miraculous action of the god had not ceased with the mythical age. A frequently recurring feature of the *iamata* is the statement that, when the sleeper awoke, his dream was found to have been already fulfilled; and here again the record follows a mythical pattern, as seen in Bellerophon's dream (Pindar, *Olymp.* xiii. 56). If, accordingly, the

¹ This argument is advanced in opposition to Kavvadias also by S. Herrlich (*loc. cit.* 33), though only by way of supporting the contention that the occult element maintained its ascendancy also in the Roman period; otherwise Welcker, *Kleine Schr.* iii. 75.

Epidaurian *iamata* belong to the class of miraculous stories designed for edification, such as are met with in all religions, we cannot regard them as documents drawn up from the actual practice of the Asklepieia.¹

The hypothesis of Kavvadias ignores the *mantic* aspect of incubation; and so O. Rubensohn (*Festschr. für Vahlen*, Berlin, 1909, p. 13) takes the further step of asserting that in the Greek period the cult of Asklepios was not concerned with dream-oracles, but that these were introduced at first by the Sarapis-Isis cult. In point of fact, however, *ἐγκοιμήσις* was known to the Greeks long before the worship of Sarapis reached them, and was based precisely on the prophetic significance of dreams (see below, II. A. II, 14, 15, 17-20; and above, the reference to the Dodonian Selloi; cf. II. B. I and 8). A distinction was made between *δνειροι θείοι* (or *θεόπειροι*), 'divine oracles given in dreams,' and *δνειροι φυσικοί*, 'oracles of the soul itself in dreaming.' The author of the *περί διατρῆς* in the *Corpus Hippokr.*, probably a Cnidian physician, believes in both kinds, but does not treat of the former class (ch. 87 [vi. 540, Littré]), as these had already been dealt with by experts,² confining himself to the 'natural' class, in which the soul reveals what will benefit the body. Both kinds of dreams are recognized by the post-Hippocratic physician Herophilos, the anatomist (Plut. *de Placit. Philos.* v. 2). Even Democritus believed in demons who reveal themselves to the dreamer in forms (*εἰδωλα*) emanating from themselves (Plut. *ib.*; Sext. Empir., *adv. Math.* 394), and Aristotle acknowledged the mantic efficacy of 'natural' dreams (*περί τῆς καθ' ὕπνον μαντικῆς*, p. 462 ff.), while the Stoics, again, regarded dreams of healing as manifestations of divine providence. In view of such favourable recognition on the part of physicians and philosophers, it was, of course, incumbent upon the official directors of the practice of incubation to do all they could to ascertain the divine will as indicated in the dreams. Everything turned, therefore, on the correct interpretation. The special literature of the subject formulates two classes of revelations (Artemid. i. 2): (1) *δνειροι θεωρηματικοί*, 'dreams to be followed literally'—even there, however, interpretation had to be resorted to whenever the literal application of the prescription threatened the patient's life³—and (2) *δνειροι ἀλληγορικοί*, 'dreams which indicate the remedy indirectly.' As regards the latter, Artemidorus (iv. 22) deprecates all perversity of interpretation, and asserts that the *συνταγαί* of the gods, when given in enigmatic form, are nevertheless quite clear; thus the dream of a lamb sucking the breast of an invalid signifies an application of *ἀρνόγλωσσον*. Preposterous interpretations were a characteristic feature of the Imperial period—e.g. a vision of the Athene Parthenos of Phidias was fantastically interpreted as signifying the application of an injection of Attic honey (Aristid. ii. 403 [Keil]).

Again, *interpretation of dreams* and a therapeutical practice founded thereon are met with—to leave Asklepios out of account meanwhile—in the Plutonium near Nysa (II. A. 17, below), in the Dionysian dream-shrine at Amphikleia (15), in the cult of the Dioskouroi at Byzantium (14), and in the Amphiareion at Oropos (19). Now, it is quite impossible to understand why incubation, the characteristic feature of which, from its

earliest infancy in Babylonia, was always the dream-oracle, should retain its character among the Greeks generally, and yet in particular should degenerate in the Asklepieia into a mere ornamental adjunct. Those who, in view of the Epidaurian *iamata*, accept the theory of Kavvadias overlook the fact that we have positive testimony to the dream-oracles of Asklepios during the Greek period, viz. in the *περί θεῶν* of Apollodorus, who in that work speaks of the god as 'praeses divinationum et auguriorum' (Macrob. *Sat.* i. 20). Apollodorus must therefore have known of the *συνταγαί* given by Asklepios in dreams, and thus also of remedies applied in accordance with them. Nor are traces of this combination wanting elsewhere. In *Ælian*, frag. 100 (Suid. *s.v.* *Ἰαλόνων*) the god, *ἐπιστάς* (the technical term for appearing in a dream; cf. Deubner, *de Incubatione*, Leipzig, 1900, p. 11), is said to have prescribed a salve of swine's fat and vinegar for diseased eyes, and the anaæsthetic measure of the words shows, as Fritzsche (on *Thesmoph.* 949) has noted, that they are taken from a comedy. The three-months' course of healing undergone by *Æschines* the rhetor, in Epidauros (*Anthol. Gr.* iv. 330), might be appositely cited as additional evidence, if we were certain that the patient was *Æschines* the Eleusinian (cf. Pauly-Wissowa, ii. 1638); the fact that the epigram speaks of him as an Athenian forbids us, at all events, to identify him with *Æschines* the Milesian, a contemporary of Pompey. Finally, an indirect testimony to the curative operations of the Asklepieia is furnished by a current tradition which is rejected solely on account of the foolish assertion with which it concludes, but which contains the quite defensible statement that the profane medicine of the Greeks was derived from their religious medicine, and, above all, from that of Asklepios. Artemidorus (iv. 22) states that many persons in Pergamos (Asklepieion), Alexandria (Serapeion), and elsewhere were treated according to prescriptions given in dreams: *εἰσι δὲ οἱ καὶ τὴν ἱατρικὴν ἐκ τοιούτων συνταγῶν λέγουσι εὐρῆσθαι*. Similarly, Iamblichus (*de Myst.* iii. 3) says that the healing art had its origin in the *θεοὶ δνειροὶ* of Asklepios. What is here affirmed of profane medicine in general is referred to by Strabo (xiv., of which Apollodorus is the principal source) as a current tradition regarding Hippokrates in particular: *φασι δὲ Ἰπποκράτην μάλιστα ἐκ τῶν ἐνταῦθα [in the Coan Asklepieion] ἀνακειμένων θεραπειῶν γυμνάσασθαι τὰ περὶ τὰς διατράς* (p. 657. 19). But, if the medical praxis of the Coan temple embraced such miraculous proceedings as are found in the Epidaurian *iamata*, no sober-minded man could have regarded them as providing instruction for scientific medicine. We must accordingly assume that records of the medical procedure of temples were preserved in the Asklepieion of Cos, and that these provided a footing for the current opinion regarding Hippokrates. That opinion was first brought into discredit by the allegation—not found in Strabo's source—that the great Coan physician was an incendiary.

It is singular that Hippokrates, the supreme genius of ancient medicine, has left so few positive traces of his personality. For his descent from the Coan Asklepiadæ, and for his rapid advance to renown, we have the explicit testimony of his younger contemporary, Plato (*Prot.* 311 B, *Phædr.* 270 C), but, as Friedrich (*Hippokratische Untersuchungen*, Berlin, 1899, p. 1) says, 'he was for Aristotle already an almost mythical personality.' The *Corpus Hippokr.* contains over seventy treatises, but none of them can be with absolute confidence ascribed to the master, while many are not even products of his school. The *Vita* compiled from Soranos and other sources (A.

¹ A very significant circumstance is that the supposed original votive inscription belonging to stèle i. no. 15 (Hermodikos) proves to be a fabrication in a pseudo-archaic script.

² The sources used by Artemidorus are of much later date than the special literature indicated here, which, unfortunately, has not survived.

³ As, e.g., the prescribed bleeding to the amount of 120 pounds (Aristides, ii. 405 [Keil]).

Westermann, *Biographi Gr.*, Brunswick, 1845, p. 450) is a blend of fact and fancy. His birthday is attested by a reliable source—a Coan archive; while we may probably rely also upon the statement that, on the completion of his early studies, he was induced by the death of his parents to migrate to Thessaly, that he lived at Larissa, and eventually died and was buried there (cf. *Anth. Gr.* vii. 55). The name of his eldest son, Thessalos, likewise points to that country, as it is not met with in any previous generation of the Asklepiadae. There is nothing to show that he ever returned to his native place, and Herzog's untiring researches in Cos have not yielded a single fact regarding him. It would thus seem certain that he left the island for ever at an early age. The ancients of a later day were manifestly at a loss to account for this. The *Vita* gives three distinct reasons, viz. (1) an injunction intimated in a dream (Soranus); (2) his desire to widen the horizon of his medical knowledge; and (3) his being accused of burning the Cnidian library (so Andreas, perhaps physician in ordinary to Ptolemy IV., whom Galen [xi. 795, Kühn] stigmatizes as a wind-bag). The charge implied in the last-mentioned explanation is attributed by S. Reinach (art. 'Medicus,' in Daremberg-Saglio, 1670) to the jealousy of the priests of Asklepios, but erroneously, as the relations between these and the Asklepiadae (on which cf. Lefort, *Mus. belge de philol.* ix. [1905] 197 ff.) were always of a friendly character. The accusation could have arisen only from the antagonism between the Cnidian and the Coan schools of medicine, as it was in reality meant to brand the head of the latter as a plagiarist who availed himself of the professional literature of the former—a point which Tzetzes obliterates by transferring the burning to the Coan library, though he too makes it a question of non-religious medical literature (*ἐν Κῷ βιβλιοφύλας δειχθεὶς τὰ παλαιὰ ἱατρῶν ἐνέπηρσε βιβλία καὶ τὸ βιβλιοφύλακτον*). The statement of Andreas makes no mention whatever of the votive tablets of an Asklepieion; the earliest suggestion of these occurs in Varro, according to whom (*ap. Plin.* xxix. 4) Hippokrates first copied the records of cures deposited in the Coan sanctuary by those restored to health, and then burned the temple. This is obviously nothing but an abortive attempt to interweave the anti-Coan version of Andreas with the view of the origin of scientific medicine just noted. That the latter hypothesis, however, was not put forward wholly at a venture, but might find some support in a genuine practice of healing in the Asklepieia, is shown by the testimony of Apollodoros to the mantic functions of Asklepios, and the recipe prescribed by the god in the fragment of a comedy in Aelian, fr. 100 (above, p. 543^b). The present writer would add a reference to an Athenian votive relief of the 4th cent. B.C. published by Ziehen (*Ath. Mitt.* xvii. [1892] 232, fig. 3), representing a patient stretched upon a *κλίνη*, and a surgeon engaged in treating him, while Asklepios, figured on a much larger scale than either, stands passively by (in the statuary type in Roscher, i. 634, schema i.). Here, then, we have monumental evidence of the fact that the personnel of the temple engaged in therapeutic practice under the sanction of the god.

It is thus impossible to deny that genuine medical treatment—directed, it is true, by oracles of healing—was practised in the Asklepieia of the Greek age. As regards the therapeutic value of such treatment, we are not able meanwhile to judge, for investigation of the Greek period has so far yielded no original votive tablets dedicated by restored patients and containing records of the prescribed remedies, such as are supplied for the Roman period in the pathological narratives of P. Granius (Lebene) and Jul. Apellas (Epidauros), but it is at

least an allowable hypothesis that the curative methods of the earlier age, in keeping with the higher state of its medical knowledge and the less debased character of its religion, were superior to those of the later. The prestige of dream-shrines would then be at its height, while practical medicine still maintained a close connexion with the occult, as in the Cnidian medical school (cf. Gomperz, *Gr. Denker*, i. 250), and probably even more in that of Rhodes—the first to become extinct (Galen, x. 5 [Kühn]). The (Cnidian) author of the *περὶ διαίτης* (iv. [περὶ ἐνυπνίων] ch. 87) lays down the following principle: 'Prayer is certainly very good, but one who calls upon the gods must himself also do his part' (*δεῖ δὲ καὶ αὐτὸν ἐπὶ λαμβάνοντα τοῖς θεοῖς ἐπικαλεῖσθαι*). Some of his interpretations of dreams are such as we might ascribe to an Asklepiian priest, as, e.g., ch. 88 (abbreviated): 'If in a dream one fights in opposition to the doings of the day, it signifies some bodily disaster, and this is to be counteracted by emetics, dieting, bodily movements, exerting the voice, and [last, though not least] by prayer.' We seldom meet with the case where the priestly function is discharged by a physician. Three instances are given in Pauly-Wissowa, ii. 1685; a fourth is probably to be found in Kalliphon, the father of Demokedes; he was a priest of Asklepios in Cnidus (Suid. s.v. *Δημοκίδης*), and, as the healing art was then hereditary in families, probably also, like his son, a physician. But we cannot say whether the priestly office as such embraced the vocation of interpreting dreams. In the Plutonium near Nysa dream-reading was the function of the *ἐμπειροὶ τῶν ἱερέων* (below, II. A. 17), and we may doubtless assume that persons specially versed in this art were to be found in all dream-shrines. It was only natural that these adepts should have tried to discover a practical meaning in the dreams vouchsafed by their god. And in finding these meanings they were in no way guilty of a 'pious fraud' (Herrlich, *op. cit.* 13), but were rather the victims of self-delusion, as, in a related sphere, were also the Delphic priests in their task of moulding the incoherent utterances of the Pythia into intelligible sentences (cf. the critical estimate of this function in Schömann, *Griech. Alterth.*, Berlin, 1897, ii. 318).

The facts thus adduced seem to the present writer to justify the view that among the Greeks, as among the Babylonians and Egyptians of an earlier age, religious medicine did not dispense with rational remedies. That practical modes of treatment were associated with miracle, 'faith's favourite child,' is shown not only by the craving for marvels which ran riot in the Epidaurian *iamata*, but also by the legend narrating the founding of the Asklepieia of Naupaktos (Paus. x. 38. 13) and the Insula Tiberina (Ovid, *Metam.* xv. 660 ff., etc.). We may also suppose that, alike in the waking state and during incubation, cures were not infrequently wrought quite apart from the oracular adjunct and solely by means of *suggestion*, and then extolled as the miraculous works of the deity. We shall not pursue the subject further here, as we are meanwhile concerned only to follow the traces of rational therapeutics within the sphere of religious medicine. From the former alone is there any real passage to the altogether rational conception of *Hygieia* in the Asklepiian cult, with regard to whom the reader is referred to the section dealing with 'Asklepios' in II. A. 20, ii. (2) below. Her radiant figure appears as something out of keeping with the mystical and, in essence, non-Hellenic dusk that surrounds the practice of incubation.

II. HEALING GODS AND HEROES.¹—A. GODS.—

¹ The following list touches only incidentally on the deities of childbirth.

The belief in gods implies also belief in their sway over health and disease; and, accordingly, in all manner of troubles, but especially in the case of loss of health, appeal is made for divine help. Originally, however, there existed no belief in special deities of healing. In *Od.* v. 397 the reference is quite general: 'the gods loosed him graciously from his trouble.' Every deity could properly exercise this power, so far at least as he was thought of as a deliverer, or as a protector against evil; though epithets like *σωτήρ*, *ἀλεξίκακος*, etc., are not to be interpreted off-hand in a medical sense, for, as will appear from the following synopsis, they have usually quite a different meaning and reference. It may, in general, be taken for granted that at the outset the sufferer appealed simply to his family or tribal deity. It might seem to have been the most natural course to regard Apollo, the ancient god of pestilence, as a healing deity in the specific sense, but, in consequence of his extensive range of action, this did not take place—a circumstance due in part to the early incorporation of Asklepios in the Apolline group. The gods associated with incubation have a special affinity for the medical sphere (see 14, 15, 17-20 below), doubtless because of the mantic significance generally ascribed to dreams. Here also, however, other and for us mostly untraceable factors have operated towards specialization. Thus, *e.g.*, Trophonios was never more than an oracle-deity in a general sense, while Amphiaraos, for reasons which we cannot discover, became, more specifically, a giver of healing oracles. In the case of Asklepios, the Gr. god of healing *κατ' ἐξοχήν*, we may probably find an explanation of his special function in his having become a son of Apollo, the god of oracles. But the contraction of his sphere of action was gradually arrested in the conflict of heathenism with the Nazarenes, and he becomes eventually the *σωτήρ τῶν θλόν* (Aristides, Julian), and the centre of the universe (*CIL* vi. 1). Nevertheless, his principal emblem, the snake-coiled rod, remains to this day the specific symbol of medicine.

1. **Zeus.**—Zeus, the sovereign of the Greek pantheon, though early regarded as the sender of sickness (*Od.* ix. 411), seldom appears as a healing god. His common epithet, *Σωτήρ* (Preller-Robert, *Gr. Mythol.*⁴, Berlin, 1887-94, i. 151. 3, and O. Gruppe, in I. Müller, *Handbuch*, v. [Munich, 1897] 1108. 3), signifies the 'deliverer,' and has no traceable reference to disease—as, *e.g.*, on the statue in the agora at Athens, dedicated to him as the 'deliverer' in the Persian troubles, and on the images with emblems of battle and victory, erected to him and Athena Soteira in the Piræus, to celebrate the restoration of Athens under Conon (H. Brunn, *Gesch. d. gr. Künstler*², Stuttgart, 1888 f., i. 270), just as the Zeus Soter and Artemis Soteira of Megalopolis signalize the achievement of Epaminondas (Paus. viii. 30. 10). The like holds good of the titles 'Ἀλεξίκακος', 'Ἀποτροπαῖος', 'Ἀπήμιος', 'ὑπερδόςιος' (cf. O. Weinreich, *Antike Heilungswunder*, Giessen, 1909, p. 41), and 'Ἐπήκοος' (*Ath. Mitt.* xxvii. [1912] 23). Whether the title *Ἰατὴρ* in Rhodes (Hesych.) bears a particular reference to Zeus as the queller of plague is a moot point (see below, 7). The stone on which Orestes was delivered from his madness was called *Zeus καπνώτας*, i.e. *καταπατήτης* (Paus. iii. 22. 1); and we light at length upon the physician-deity in Zeus 'Ἐξαιρετήρ (Solon, *ap.* Pollux, viii. 142),¹ and in the Zeus 'Υψίστος to whom were dedicated the models of limbs in the Pnyx (*CIA* iii. 150-156), and those in Melos (?) (Panofka, 'Heilgötter d. Griechen, in *ABAW*, 1843, p. 258), though we cannot definitely

identify the *θεὸς ὑψίστος* to whom similar dedications were made in Cyprus (*BCH* xx. [1896] 361). The fact that Zeus was assigned a 'lot' in the altar at Oropos (19 below) brings him within the scope of such healing activities. Evidence of the existence of incubation in the primitive cult of Zeus may possibly be recognized in the Dodonian *Σελλοί* of Homer (*Il.* xvi. 235; see above, p. 542¹).

2. **Athena.**—Athena, 'the best beloved and most congenial child of the heavenly father,' shares with him his somewhat vague relation to the healing function. Such of her epithets as some seek to interpret in a medical sense are in but few cases to the point. Thus the Zeus Soter and the Athena Soteira above referred to have to do with political matters, and the same is probably true of the oblation to these two deities and the children of Leto mentioned in Delian inscriptions (*BCH* vi. [1882] 22), as the Delians offered *soteria* also in Athens (*BCH* iv. [1880] 327). *Ἀναδ κοινός* of Athena Soteira and Poseidon near Asea (Paus. viii. 44. 4) was associated with the auspicious home-coming of Odysseus. The application of the epithet in Mytilene (*IG* ii. 111) has not been explained, nor the 'Ἀθηνᾶ Ἀποτροπαία (with Zeus Apotropaïos) in Erythræ (G. Dittenberger, *Sylloge*, Leipzig, 1883, no. 370. 70); but the Attic 'Ἀθηνᾶ Ἰατρονία in the inner (Paus. i. 2. 4) and outer (Plut. *Decem orat.* vit. 7) Kerameikos, and at the Oropia altar as a guest (19 below), bring her within the medical sphere. The Athena Hygieia worshipped on the Akropolis even before the Persian wars is also distinctively Attic (votive inscriptions of Euphronios and Callis, *CIA* i. suppl. 362, and *Ath. Mitt.* xvi. [1891] 154). Her altar and statue by Pyrrhos stood beside the Propylæa, and were ascribed by tradition to Pericles, to whom the goddess had in a dream revealed the remedy (the wall-herb *περόλκον*) for a workman injured by a fall (Plut. *Pericl.* 13; Plin. xxii. 43). The votive inscription on the base, however, says that the work was dedicated, not by Pericles, but by the Athenians; and, as both the base of the statue and the altar are in some way related to the Propylæa, Wolters (*Ath. Mitt.* xvi. [1891] 153 ff.) believes that the occasion of their erection was the cessation of the great pestilence. All attempts to find the Hygieia of Pyrrhos among the extant statuary types of Athena, as, *e.g.*, in the snake-entwined Athena on the base of the Barberini candelabrum (*Mus. P. Clement.* iv. pl. 16), have failed (Wolters, *op. cit.* 163). The 'Athena Hygieia' erected in the Epidaurian *hierion* by an Athenian of the Imperial period ('Εφην. ἀρχαιολ., 1886, pl. 12), representing her—strangely enough—as rushing to battle, is no blunder of some ignorant donor (Staës, 'Εφην. ἀρχαιολ., 1886, p. 253), but is really a derivative of the form assigned to Athena Hygieia, i.e. that which depicts her as the ancient Athena Polias brandishing her weapon. This form, as seen on prize vases for the Panathenaia (Springer, *Handb. der Kunstgesch.* i.², ed. Michaelis, 1907, fig. 320b), has been manifestly used by Callis for his votive offering to Athena Hygieia (cf. *Ath. Mitt.* xvi. 154), and it seems to have been as far as possible adhered to in the statue of Pyrrhos. The Attic Athena Hygieia, accordingly, had no distinct type of its own, but simply reproduces the Athena Polias, who, on the occasion of an earlier pestilence, probably that of 500 B.C. (*CIA* i. 475), had hurried to the help of her city. If the Arcadian Athena *Alea* is connected philologically, not with 'heat' (O. Müller), but with 'protection' (Rückert), it would serve admirably as evidence for the right of sanctuary in her temple at Tegea, but would afford no proof of her being regarded as a goddess of healing. The ancient idol of Endoios is certainly flanked by statues of Asklepios and Hygieia executed by Skopas (Paus. viii. 47. 1), but this

¹ The Zeus *Λεπυαῖος* at Lepreum (Paus. v. 5. 5), which Gruppe, *op. cit.* 1203. 3, connects with *λεῖψη*, 'leprosy', is ruled out by the obvious emendation *Λύκαιος* (Curtius, *Peloponnes* ii. [1852] 117).

joint cult need not be earlier than the time of Skopas himself (Dümmeler, in Pauly-Wissowa, ii. 1975). Nor, finally, does the statue of the Eileithyia—in the position of a parturient woman—in the temple of Eileithyia at Tegea, and popularly known as *Ἀργὴ ἐν γόασιν* (Welcker, *op. cit.* iii. 185), afford any evidence for the Tegean cult of Athena. The title 'Τεπεδέξια under which Athena (together with Zeus' Τεπεδέξιος) was worshipped, according to Steph. Byz., s.v. 'Τεπεδέξιον, in Lesbos may be understood quite generally as referring to the divine hand held protectively over one. A like uncertainty attaches to the *σώτρεα ἐπ' ἥκοος* in a Cappadocian inscription (BCH xxxiii. [1909] 131; cf. Weinreich, in *Ath. Mitt.* xxxvii. [1912] 11). The title Optileitis met with in Sparta and said to refer to a cult founded as *ἀκέσσεος χαριστήριον* by Lycurgus (Plut. *Lyc.* xi.; Paus. iii. 18. 2) has undoubtedly a medical connotation. Gruppe (*op. cit.* 1204) quite unwarrantably infers the existence of incubation in the cult of Athena from Pind. *Ol.* xiii. 56 (Bellerophon) and Paus. ix. 34. 1 (Iodama).

3. Helios.—The links which connect Helios with health and medicine are fewer than the affinity between the ideas of light and life might lead us to expect. As he punishes by inflicting blindness (Soph. *Oed. Col.* 868), so he restores sight to Orion (Hesiod, *ap. pseudo-Eratosth. Kataster.* 32), and is therefore invoked by Polymestor (Eur. *Hekub.* 1067). His cult yields no evidence here; the invocation 'Ιεραὶν in Timoth. fr. 13 (Bergk) comes from a battle-song, while his title Soter in Megalopolis belongs to the age of syncretism (Paus. viii. 31. 4). It is worthy of note that Hermippos (schol. Aristoph. *Plout.* 701) speaks of the Heliad Lampetia as the wife of Asklepios—a detail which, as the present writer thinks (Roscher, iii. 1489), goes back to a Rhodian (in reality a Sicynian) source. Circe, the daughter of Helios, and Agamede and Medea, his grand-daughters, are sorceresses skilled in herbs; and the Heliad Pasiphaë likewise was proficient in magic (Apollod. iii. 15. 1). For the herblore of the wise women, cf. Welcker, *op. cit.* iii. 20 ff.

4. Poseidon.—Poseidon's only link with healing is his having been worshipped as 'Ιατρός among the Tenians (Clem. Alex. *Protrept.* 26). It is very curious that in the 'Ιλιον πόρθσις the warrior-physicians Machaon and Podaleirios, who are everywhere else regarded as Asklepiads, are spoken of as sons of Poseidon. The verse in question is in a corrupt state—*αὐτὸς γὰρ σφιν ἔδωκε πατὴρ ἐνοσίγαιος πεσέω*—and Welcker (*Ep. Cycl.* ii. [Bonn, 1849] 525) proposes the emendation . . . *πατὴρ νοστήλια πασιών*. Wilamowitz (*Isyllos*, Berlin, 1886, p. 47), however, in view of the local cult of Poseidon at Tenos, maintains the view of their descent from that deity, and the present writer expressed agreement therewith in Pauly-Wissowa, ii. 1658. But the question has meanwhile been discussed afresh by Lefort (*Musée belge de Phil.* ix. [1905] 215 ff.), who decides against Wilamowitz and in favour of Welcker; and rightly so, as the scholia to *Il.* xi. 515 cite the *Porthesis*, not with reference to the genealogy of the two warriors, but in order to establish the medical proficiency of each. Moreover, a corruptly transmitted verse does not warrant us in rejecting the constant tradition of their descent from Asklepios. To Lefort's arguments might be added the testimony of Aristides (i. 78 D): 'Their connexion with Asklepios is affirmed throughout the whole world.'

5. Aristaios.—Aristaios was an ancient Thesalian deity akin in character to Zeus and Apollo (Pind. *Pyth.* ix. 64), and was worshipped in Ceos as Zeus Aristaios and Apollo Nomios (schol. Apoll. Rhod. ii. 498). Having been reduced to the rank of hero by the poetry (*ἔπεια*), he becomes the son of Apollo and Cyrene the Lapith nymph, and the

pupil of Cheiron (Apoll. Rhod. ii. 510). Various benefits in the sphere of husbandry, and also—as a gift of the Muses—the arts of medicine and divination, were ascribed to him (*ib.* 512). He was said to have taught the Ceians how to ward off the baneful influence of Sirius by expiatory sacrifices and the clashing of weapons (Theophr. *de Vent.* 14). Pherecydes calls him the son of Paion (schol. Apoll. Rhod. iii. 467), but this name is to be understood here as a designation of Apollo, and not as the eponym of the Paeones (Gruppe).

6. Cheiron.—A signal contrast to Aristaios, the representative of magic healing, is found in the local deity of the herbiferous Mt. Pelion, viz. the Cronid Cheiron, the representative of pharmacognosis, which forms a transition from the sphere of the occult to rational therapeutics. His name has been traced to *χείρ*, either as the 'hand' skilled in art (Welcker, *Kl. Schr.* iii. 1; H. Usener, *Götternamen*, Bonn, 1896, p. 157; Escher, in Pauly-Wissowa, iii. 2302), or as the 'hand' applied to the sick with magic effect (Weinrich, *op. cit.* 16). Tradition speaks more distinctly of his pharmaceutical than of his surgical achievements; in *Il.* iv. 219 and xi. 832, Asklepios and Achilles respectively receive from him *ἥπια φάρμακα* efficacious for relieving pain or staunching blood, and, on the whole, the art of the warrior-surgeons in the *Iliad*, as being free from the accessories of magic, is an inheritance from Cheiron. In a tribe dwelling near Mt. Pelion, and claiming descent from Cheiron, herb-lore was handed down from father to son as a mystery (Dicæarch. fr. 60. 12), and the Magnesians sacrificed to him, as the divine physician, the first-fruits of herbs and plants (Plut. *Quæst. conviv.* iii. 1. 3). In the Pelethronion, a district near Mt. Pelion, grew the far-famed *χειρόννεον* (Theophr. *Hist. Plant.* ix. 7), or *κενταύρειον* (schol. Nicand. *Ther.* 565), the miraculous virtues of which, when applied by a deity, are indicated by its having been called *πάνακες*. Such panaceas were ascribed also to Asklepios and Herakles, and were even adopted by non-religious medicine, though in the form of actual plants with curative properties. The Egyptian physicians likewise were acquainted with panaceas (*Pap. Ebers*, p. 173, ed. Joachim), but, in keeping with their liking for mixtures, compounded them of various ingredients. Cheiron's medical functions, as handed down by tradition (collected in Pauly-Wissowa, iii. 2304), are summarized in the curriculum of his pupil Asklepios given by Pindar (*Pyth.* iii. 45), as surgery, internal medicine, and incantations (*ἐπαοιδά*). The last-named were not, of course, used by themselves alone, but were simply a magical adjunct (cf. *Od.* xix. 457), as in Bab. and Egypt. medicine.

7. Paieon.—Paieon, the Homeric physician of the gods, heals the wounds of Hades and Ares by *φάρμακα ὀδυνήφρατα* in *Il.* v. 401 and 900 respectively, but in *Od.* iv. 232 he comes into touch with the human race as the ancestor of the Egyptian physicians. He is not to be confused with Apollo.² The two deities are explicitly distinguished by Hesiod (fr. 194 [Rzach]) and Solon (fr. 13. 45). Usener (*op. cit.* 153) is thus certainly justified in recognizing Paieon as an ancient and independent god of healing, but he has not succeeded in finding any trace of this deity in Greek religion, as the 'signum Paeanis' in the Asklepieion at Syracuse (Cic. *in Ferr.* ii. iv. 128) is a figure of Apollo (Eisele, in Roscher, iii. 1246). The votive inscription *Παιῶνος ἐν Ἀλφειῇ* found by Herzog in Cos (*Archæol. Anz.*, 1903, p. 198) refers either to Asklepios or to Apollo, who likewise was worshipped there.

¹ Hereafter referred to as *RE*.

² This identification was wrongly read into *Od.* iv. 232 by Crates and Zenodotus, whose view was impugned by Aristarchus; cf. Lehrs, *Aristarch.*, Leipzig, 1865, p. 179; Ludwig, *Aristarchus homer. Textkritik*, do. 1884–85, i. 541.

8. Apollo.—Apollo is a very intricate figure, and the various explanations of his name have not as yet furnished the key to his original character. This is true even of the most recent attempt—that of Usener (*op. cit.* 309), who recognizes the ‘depulsor malorum’ in an assumed primary form **Αππελλος*. In Homer, Apollo has as yet no connexion with medicine, though he is certainly the sender and stayer of pestilence (*Il.* i. 43 ff.), and the chant of entreaty addressed to him is called a *παῖων* (i. 473), which is simply the name of the physician of the gods just dealt with. This may be formally accounted for by the fact that the refrain of the chant was *ὦ παῖον*, but the uncertain meaning of the word renders it difficult to discover the material ground of the usage. If the word signifies ‘cleanser’ (Skr. *parjāvan*; Pictet, in Kuhn’s *Zeitschr.* v. [1856] 40), its employment as an invocation to the queller of pestilence would be satisfactorily explained. As an epithet of Apollo it occurs also in the *Hymn to Apollo Pythian*. 94 (*Ἰηπαῖον*); subsequently the form used was simply (*Παῖων*) *Παῖων*, or *Παῖαν*. At first, and for centuries, the expedients used to counteract pestilence were purely theurgical—consultation of a *μάντις*, *ιερεὺς*, or *ὄνειροπόλος* (*Il.* i. 62), sacrifice, and *præan* (i. 447 ff.); instances for a later period are given by Welcker (*Kl. Schr.* iii. 33 ff., ‘*Seuchen von Apoll*’). The device of Empedokles in directing the river Hypsas into a half-dried lake is notable as an early example of a rational remedy (Diog. Laert. vii. 2, § 70, and coins of Selinus in B. V. Head, *Historia Numorum*², Oxford, 1911, p. 168). The conception of Apollo as the god of pestilence probably rests on the solar aspect of his character. He was worshipped at Lindos specifically as *Δολιμῶς* (Maer. *Sat.* i. 17. 15). In this relation he is the one who punishes—the death-god; and here his sister Artemis is associated with him (Niobids, Coronis). On the other hand, his benignity as the stayer of plagues finds expression in such epithets as *Θύλιος* (also at Lindos [Ross, *Inscr. gr. ined.*, iii., Berlin, 1845, no. 272], in Delos, and at Miletos [Strabo, 635]), which G. Curtius connects with *salus*; *Ἐπικούριος* (in Bassæ [Paus. viii. 30. 4]); *Ἀλεξικακός* (in Athens [statue by Calamis, Paus. i. 3. 4], where, instead of the great plague, we should think of some earlier epidemic); *Ἀκέσιος* (in Elis, Paus. vi. 24. 6), and *Ῥοσειαντήρ* (in a Clarian oracle [Weinreich, *op. cit.* p. 150]). But the Paian was also a chant of battle and victory (*Il.* xxii. 391; *Hymn to Ap. Pyth.* 339; Thucyd. vi. 32, etc.), and thus Apollo acquires a sphere of action far transcending the domain of pestilence—that, namely, of the averter of evil in general, as implied in the titles *Ἀποτροπαῖος* (Aristoph. *Vesp.* 161; *CIG* 464) and *Σωτήρ* (refs. in *RE* ii. 69). The epithet *Ἰήσιος* (Soph. *Ed. Tyr.* 1095) is not, as the Stoics thought, a derivative of *ἰάσθαι*, but is taken from the refrain of the Paian in its longer form, *Ἰήσιος Παῖαν* (*ib.* 154), and has therefore as wide a connotation as the latter. Now, though the more extensive sphere of ‘deliverer’ might very readily have been contracted to the narrower one of ‘physician,’ our available evidence of the process is but scanty. The Delphic god, it is true, delivers oracles for arresting pestilence, but, as regards his being consulted in any particular case of disease, the present writer can recall only the instance of Alyattes (Herod. i. 19), and the curious prescription (an amulet of worms from a she-goat’s head) given by the Pythia for epilepsy (Alex. of Tralles, 569 [Puschmann]). The reason why Apollo did not become the physician is to be found in the fact that Asklepios was conjoined with him at a relatively early period (cf. 20 below), and the healing function could accordingly be delegated to the latter. Thus, in the heading of the Epidaurian *iamata*, Apollo, as the sovereign authority, is named

first—though he does not intervene in the actual cures; while Asklepios—as a departmental chief, so to speak—occupies the second place; so also in the ‘Hippokratric’ oath: *ὕμνυμι Ἀπόλλωνα ἰητρὸν καὶ Ἀσκληπιόν, κτλ.*

A cult confined to Ἀπόλλων Ἰατρός is found only in the Milesian colonies of the Scythian region (*RE* ii. 54; Farnell, *CGS* iv. 325 and 409), and here the worship of Asklepios sank completely into the background, the only Asklepieion known to the present writer being that of Pantikapaion (Strabo, 74). Apollo is sometimes called Ἰατρός in the poets (Aristoph. *Aves*, 584; *Plout.* 11). His title *ιατρόμαντις* in Aesch. *Eum.* 62 relates to the case of Orestes, and thus denotes, not the physician, but the *καθάρσιος*. Late writers speak of Apollo as the founder of medicine, but as having handed it over to Asklepios for its further development (Diod. Sic. v. 74; Philostr. *Vit. Ap.* iii. 44). Isolated indications of his medical activity are found in the cults of the Κόρινθος (Paus. iv. 34. 7; cf. *RE* ii. 57), *Ῥεπειδεάτης* (Laconia; cf. *Εῶνημ. ἀρχαιολ.*, 1884, p. 81 ff.; *BCH* ix. [1885] 243), and Ὠτάκός (Cyprus; *Comment. in hon. Mommseni*, Berlin, 1877, p. 682). As a guest at the Oropian altar (19 below), Ἀπόλλων Παῖων was likewise regarded as a god of healing.

8a. Maleatas.—The name ‘Maleatas’ is, as regards its form, a geographical or ethnological adjective, and needs to be supplemented by a *nomen proprium*. Farnell (*op. cit.* iv. 236 f.) would accordingly supply the name ‘Apollo’ in all cases where ‘Maleatas’ is used by itself to designate the deity invoked, as, e.g., in two archaic votive inscriptions from Laconia (*IGA* 57, 89). This view, however, is in conflict with the fact that Maleatas and Apollo are mentioned side by side in the sacrificial rubric found in the Piræus (*CIA* ii. 1651), of which Farnell gives a somewhat forced explanation. It will therefore be more in accordance with the data to recognize, as Wilamowitz (*Isyll.* 98 ff.) does, in Maleatas a deity originally distinct from Apollo. The identification of the two is attested as regards Sparta (Paus. iii. 12. 8: Ἀπόλλων Μαλεάτης), the Epidaurian *hieron* (*ib.* ii. 27. 7, and several inscriptions, *IG* iv. 932, etc.), and the Asklepieion of Trikke (*IG* iv. 950. 29). If this identification was a later development, it was probably effected in Epidaurus, where Asklepios would form the connecting link. Gruppe (*op. cit.* 189. 3) is hardly successful in explaining (on the ground of Hesych.: *μάλιαν* . . . ἡσυχον, *πραΐαν*) Apollo Maleatas as the ‘gentle Apollo,’ or in locating his place of origin, as also that of Asklepios, at Gortyna in Crete.

9. Artemis.—For the function of Artemis as a death-goddess associated with Apollo, cf. the preceding; in this capacity her special victims are females (*Il.* xxi. 483, vi. 205, 423; etc.). Gruppe (*op. cit.* 1269, 1273. 4) regards her as having been the source of psychical and nervous disorders. The other aspect of this activity is her having been the restorer of those so afflicted, as, e.g., Orestes (Pherec. fr. 97), and the Prœtids (Bacchyl. x. 98). In gratitude for the cure of the latter, their father erected in her honour, as *Ἡμέρα* and as *Κορία*, temples in Lusi (Callim. *hymn. Art.* 234)—a point so far borne out by the ordinary myth of the Prœtids (Pausanias), which relates that the maidens were cured by Melampus (B. 5, below) in the Artemision of Lusi. Lusi is the only healing-shrine assigned by tradition to the goddess (cf. the Report of excavations in *Oesterr. Jahreshften*, iv. [1901] 1 ff., which includes several dedications to Ἡμέρα, p. 83 f.). Her connexion with healing fountains, however, is attested by the epithet *Θερμιάδα* (Mitylene [*CIG* 2172, etc.], Cyzicos [Aristid. i. 503D], and Rhodos [*IGIns* i. 24. 4]). The panelling of the ancient Artemision of Ephesus

contained votive models of limbs in gold, silver, and ivory (Hogarth, *Excav. at Ephesus*, London, 1908, pp. 232, 238). Cf. also her title 'Επήκοος (*Ath. Mitt.* xxxvii. [1912] 7 ff.). Her obstetric function is indicated by the titles Λογέα (Gambreion, *CIG* 3562), Σωδία (Cheronea, *IGS* i. 3407), and Ελκείθνα (especially in Boeotia); cf. Wernicke, in *RE* ii. 1347. 10, who, however, wrongly regards Ελκείθνα as the hypostasis of Artemis, while it was really an epithet of Hera, and, as personified (Preller-Robert, i. 511 ff.), still remains closely connected with her. Similarly, *Myllitta* (Bab. *Mu'allidtu*, 'she who brings about childbirth') is an epithet of Istar (cf. Schrader, *KAT*³, p. 423. 7). The Heb. *yôledeth* (Oefeel, in Neuburger-Pagel, i. 70) is merely an artificial form designed to explain Ελκείθνα.

10. *Healing Nymphs*.—(a) As presiding over medicinal springs: (1) the Ἰωνίδες (Paus. vi. 22. 7), Ἰωνίδες (Nicand. *ap.* Athenæus, 683), or Ἰωνίδες (Strabo, 356)—connected with ἰάσθαι—nymphs of a healing fountain in Elis, and forming a tetrad, viz. Pegaia, Kalippheia, Synallaxis (probably a personification of the change towards recovery), and Iasis (cf. Hesych. *s.v.* ἰαποῖ); (2) the Anigradian nymphs, so named from the warm sulphur-springs on the lower Anigrus in Triphylia (Strabo, 346; Paus. v. 5. 10; Curtius, *Peloponn.* ii. 80), and having to do especially with skin-troubles—here we should note the combination of theurgy (prayer and vow) with rational remedies (bathing in a mineral spring); and (3) the nymphs of the alkali springs of Ischia (*IG Sic. et Ital.* 892 f., the votive offering of a physician).

(b) We have more numerous instances of the case where the refreshing properties of ordinary natural springs gave rise to the cult of local nymphs, generally in connexion with the worship of Acheloos as the father of all fresh-water springs. In their hygienic capacity these nymphs appear, together with Acheloos, as guests at the altar of Oropos (19 below).

11. *Pan*.—Pan, the Arcadian mountain and forest spirit, like his Italic counterpart Faunus, possessed mantic powers. He had an oracle in the Lykaion (schol. Theoc. i. 121), and another in the Akakesion, with the nymph Erato as his *προφῆτις* (Paus. viii. 37. 12). He received the title *Δυσήριος* in Troezen, because he stayed a pestilence by means of dream-oracles (*ib.* ii. 32. 6), but he healed men also in the waking state (Kaibel, *Epigr. gr.*, Berlin, 1878, p. 802). In the Asklepieion at Sicyon, the porch was flanked by figures of Pan and Artemis (Paus. ii. 10. 2). With reference to the healing powers of Pan Ephialtes (in the mid-day sleep), see Roseher, iii. 1400. The epithet Παιάν is applied to him only in *Orph. hymn.* xi. 1. In conjunction with nymphs, Acheloos, and Kephisos, he represents the hygiene of Nature at the altar of Oropos (19 below).

12. *Hermes*.—In the case of Hermes definite traces of the healing function are scanty. The titles Soter (Amorgos; *Ath. Mitt.* i. [1876] 332) and Alexikakos (Aristoph. *Pax.* 422) are applied to him in quite a general sense. The meaning of 'Ακάκητα (*Il.* xvi. 185, *Od.* xxiv. 10, Hes. fr. 23 [Rzach]) is disputed (cf. *Etym. Magn.*, *s.v.*); if derived from ἀκείσθαι (schol. I. to *Il.* xvi. 185 explains it by *θεραπευτικός*), it would be a specifically medical epithet, but this is scarcely conceivable with so ancient a designation; perhaps the word means 'the averter of evil' (ἀ-κάκ-ητα). Hermes Kriophoros was worshipped in Tanagra as the queller of pestilence, and in commemoration of his good services a youth carried a ram round the walls at his festival there (Paus. ix. 22. 1). The propitiatory action of Hermes survives in this custom, and accordingly the beautiful conception of the 'good

shepherd' derives its origin from a cathartic rite. Hermes is the Ἥγητωρ *δνείρων* in Hom. *Hymn to Hermes*, 14, and the god of sleep in general (Preller-Robert, i. 404), though it cannot be proved that incubation had a place in his cult. As the god of the palaestra and the gymnasium, he was the guardian of health; and it was perhaps on this account that Hygieia was in some source represented as his wife—a detail which Cornut. 16 too artificially explains by reference to his eloquence.

13. *Herakles*.—Born to avert the curse from gods and men' (Hes. *Scut.* 27), Herakles is pre-eminently the Alexikakos. In schol. Arist. *Ian.* 501 the image of Alexikakos, by Ageladas, in the demos of Melite is associated with the great plague, instead of with the pestilence of 500 B.C. (Robert, *Arch. Märchen*, Berlin, 1856, p. 39) or the Persian invasion (Studniczka, *Röm. Mitt.* ii. [1887] 91. 21). The shorter form Ἀλεξίς was current in Cos (Aristid. i. 60); in Delos and Amorgos he was worshipped as Ἀπαλλαξίκακος (*BCH* vi. [1882] 342, xvi. [1891] 671). Herakles Soter is found in tetradrachmæ in Thasos (Head, *Hist. Num.*², p. 266, fig. 164). Herakles acts specifically as a healing deity in Hyettos (Paus. ix. 24. 3), Erythræ (*ib.* vii. 5. 5), and Messana (Aristid. i. 59 D); he is the guardian-spirit of warm springs (as, e.g., at Thermopylae, Herod. vii. 176), and has a share in the Oropian altar (19 below). The πάνακες Ἡράκλειον was named after him (Theophr. *Hist. Plant.* ix. 7; schol. Nic. *Ther.* 626; *Diosc.* iii. 48).

14. *The Dioscouri*.—The widely diffused cult of the Dioscouri as Soteres is sometimes connected with navigation (*Hom. hymn.* 33, Theoc. xxii. 6), sometimes with succour in war (as, e.g., to the Locri on the Sagra [Justin, xx. 2 f.]), and even with the restoration of freedom (the device Σωτήρες on coins of Tyndaris is so explained by Head, *op. cit.* p. 189). They saved their protégé Sinonides when the palace at Crannon collapsed (Callim. *ap.* Suid. *s.v.* Σινωνίδης). The healing of Phormio the Crotonian at Sparta by one of the Dioscouri (Theopompus *ap.* Suid. *s.v.* Φορμίων) is a replica of the cure of Telephus by Achilles. The Dioscouri engaged in a regular practice of healing in their temple at Byzantium (*FHG* iv. 149, 15). The means adopted seems to be incubation combined with interpretation of dreams. Deubner (*de Incub.* 76 ff.) concludes from schol. Pers. ii. 56 that this was the case both in their sanctuary at Rome and in that at Byzantium, and, further, that in both localities their function was inherited by Kosmas and Damian, physicians and martyrs. Cf., however, below, p. 555^a, note 4.

15. *Dionysos*.—Apart from the epithets of general signification (Σωτήρ or Σωτήης, Paus. ii. 31. 5, 37. 2; *IG* iv. 1277; and Παιάν, Eur. *Lik.* fr. 480, Dindorf; 'Pean of Philodamus,' *BCH* xix. [1895] 391, xxii. [1898] 513) applied to Dionysos, he was worshipped specially as Ἰατρός and Ἱγιάτης by command of the Pythia (Athenæus, 22 and 36; Plut. *Quest. conv.* iii. 2). As Βοηθὸς νόσων he presided over the dream-oracle at Amphikleia, where his priest, as *πρόμαντις*, χράξ ἐκ θεοῦ κάρτος, i.e. just as the Pythia did (Paus. x. 33. 11). It is thus clear that in this sanctuary the priests were concerned with incubation and dream-reading, as in the Plutonion near Nysa (cf. 17 below). As regards the healing power of Dionysos conveyed by touching (Διόνυσος Ἐπάφιος in *Orph. hymn.* 50. 7), see Weinreich, *op. cit.* p. 27.

16. *Demeter*.—Demeter, worshipped as *κουροτρόφος*, was proficient in the magic of the nursery (*Hom. hymn.* iv. 227 ff.; *οὐδοτόμοιο*, v. 229, a brilliant emendation by Th. Bergk, *Gr. Literaturgesch.* Berlin, 1872–84, i. 801. 35), and in the fire-baptism which imparted eternal youth (v. 235 ff.), but the indications of her healing function are few.

In Patre she had a *hydromanteion*, in which, however, she did not prescribe remedies, but simply revealed whether the sick would die or recover (Paus. vii. 21. 12). To cite Artemid. ii. 39 as a proof of her iatric activity (Preller-Robert, i. 764. 2) is unwarranted, as this passage deals only with rules for dream-reading, while in *Orph. hymn.* 40, she is in a quite general sense the original donor of peace, law, riches, and health. To connect the device Ὑγίεια found beside the beautiful head on Metapontine coins (reproduced in Roscher, i. 2780, from the *Cat. of the Brit. Mus.*) with Demeter (Sallet), again, is precluded by the youthfulness of the head. In the medical domain, accordingly, all that we can concede to her is the function of Ophthalmitis; the three references to this are dealt with by Rubensohn, *Ath. Mitt.* xx. [1895] 360 ff., and on p. 365 her connexion with Asklepios in Epidauros, Atheus, and Eleusis is correctly adjudicated. For the female breasts upon marble blocks from her temple in Cnidus, see C. T. Newton and R. P. Pullan, *Discoveries at Halicarnassus*, London, 1862-63, i. pl. 58.

17. Hades-Pluto.—The dream-oracle in the Plutonium near Nysa on the upper Mæander (Strabo, 649; Eustath. *ad Dionys. Periegetem*, 1153) is of great importance in the history of Gr. religious medicine. Here οἱ ἑμπειροὶ τῶν ἰερέων incubated on behalf of the sick in a cave filled with earthy vapour—the *Χαρόνιον*—and regulated their curative treatment by the dreams received in the ecstatic trance. In many cases they let the patients themselves sleep in the cave for a few days without food, but, even if an invalid was favoured with a dream, the priests still acted as σύμβουλοι and μυσταγωγοί. In the Plutonium, therefore, the task of interpreting dreams devolved exclusively, and that of incubation generally, upon the priests. Such, however, was exactly the characteristic feature of the Bab. dream-shrine, which, as we saw above (p. 542ⁿ), was the prototype of the Gr. institution. Higher up the Mæander valley, near Hierapolis, was another Plutonium, having a cave pervaded by even more potent exhalations, which only the Galloi could safely approach (Strabo, 630). Whether incubation was resorted to here as well Strabo does not definitely say, but Pausanias (x. 32. 13) states that dream-shrines of the subterranean deities were to be found in several cities of the Mæander valley. From an inscription of the Imperial period (in Heuzey, *Miss. archéol. de Macéd.* ii. [1876], Inser. 120) we may assume that incubation was practised in a Plutonium at Eana in Macedonia. A miraculous cure wrought by water from the altar of Dis and Proserpina is related by Valerius Maximus (ii. 4. 5).

18. Sarapis and Isis.—Sarapis was a syncretistic creation of Ptolemy I.—a fusion of Hades-Pluto with Osiris and a Bab. deity whom Arrian and Plutarch designate Σάραπης, and in whom Lehmann-Haupt (most recently, 1910, in Roscher, iv. 340) recognizes Ea, 'king of the ocean-depths' (*sar apsi*), the early Bab. god of oracles and healing. The Bab. name was adopted by the Egyptians in the form *Serapis*, in which they discerned their own *wesjr hapi* (Osiris-Apis), i.e. the dead Apis who had been zealously worshipped from the time of Psammetichus. The distinctive feature of the Ea-cult—the healing oracle obtained by incubation—was retained by the new Alexandrian deity, who thus became a powerful rival of the similarly endowed Asklepios. This rivalry he shared with Isis, who became closely allied with him, and who in the Egyptian period had been a healing goddess, though without incubation—an institution unknown among the Egyptians (see above, p. 541 f.). Sarapis and Isis then spread their conquests over the entire Hellenistic and Roman

world, carrying with them the assiduous cultivation of the dream-oracle. The sources used by Artemidorus (ii. 44) preferred before all other oracles the dreams vouchsafed by these two deities. Here the essential thing was the interpretation of the prescriptions so given (*συνταγαί*), though, as we might expect, miracles of direct healing (*θεραπείαι*) were not wanting; the Greek words are the technical terms used in the aretalogical literature. For the healing functions of Sarapis and Isis, see Weinreich, *op. cit.* 117 ff., with Excursus iii. on Artemid. iv. 22. Of the much-frequented Serapeion in Canopus, Strabo (801) writes that persons incubated there not only on their own behalf, but also on behalf of others, and that records were kept both of the *θεραπείαι* and of the *ἀρεταὶ τῶν ἐνταῦθα λογίων* (i.e. *συνταγῶν*); the redactors of the Epidaurian *ἱεράτα*, as we saw, had eyes only for the former. Models of restored limbs offered to Sarapis and Isis (cf. Tibull. i. 327) are of frequent occurrence (cf. Drexler, in Roscher, ii. 526 ff.). A relief from Thebes (Rangabé, *Ant. Hellén.* ii. [1855] 778, no. 1213) with the inscription Εὐνοία Εὐσέβει εὐχὴν depicts a youth on a κλίνη, three nymphs dancing beside it, and, in the background, a bearded head on a larger scale (Acheloos)—probably a thank-offering for a water-cure prescribed by Isis (cf. 10).

The three chthonic gods, Amphiaraios, Trophonios, and Asklepios—the incubation-deities *par excellence*—are all closely related to Hades. Of these, however, Trophonios may be passed over here, as he shows no special development on the medical side. Amphiaraios and Asklepios, on the other hand, became healing gods in a specific sense—both, it is true, being reduced in epic poetry to the level of heroes, but maintaining their divine dignity in the cultus. Amphiaraios, as a result of his being confined to a locality, never gained any extensive sphere of influence, while the beneficent hand of Asklepios reached as far as did the influence of Greek and Roman culture.

19. Amphiaraios.—The Greek epic makes Amphiaraios a hero of Theban-Argive legend, and a descendant of the seer Melampus (below, B. 5), but even as such his originally divine (chthonic) nature finds expression in the circumstance that he was at death translated to the under world (Pind. *Nem.* ix. 24). He presided over the sanctuary of Oropos. The high regard accorded to this dream-shrine is shown by its having been consulted by Cræsus and Mardonius (Herod. i. 46, 52, viii. 134). The curative procedure of this Amphiareion, which, it is true, was as bitterly satirized by Aristophanes in his *Amphiaraios* (presented 414 B.C.) as was that of the Asklepieion in his *Ploutos* (408 and 388 B.C.), formed the central feature in the activities of the sanctuary. The code of regulations (*IG* vii. 235) fixes the client's fee at one and a half drachmæ, and makes mention of a *koimeterion* with two separate apartments beside the altar. An incubation-hall of later date, situated at the theatre (P in Dürrbach's map, reproduced in *RE* i. 1895) was similar in design to the ἄβαρον of Epidauros. The visitor, after a period of fasting—'in order to receive the oracle with a clear soul' (Philostr. *Vit. Apoll.* ii. 37)—and the sacrifice of a ram, prepared himself for the intimation of the god by sleeping on the hide of the animal sacrificed (Paus. i. 34. 4, 5). We thus see that Amphiaraios performed his cures, not by direct miracles during incubation (as in the redaction of the Epidaurian *ἱεράτα*), but by means of dream-oracles, which were, of course, submitted to the judgment of the dream-reader. An important factor in the treatment was the λουτήριον, with separate compartments for men and women (*IG* vii. 4255)—which is often referred to from the days of Aristophanes and Xenophon (Xenoph. *λουτήριον Ἀμφιάροιον*). The fountain of Amphiaraios, to the south of the altar

(F in map), was investigated by the physicians Erasistratos and Euenos (Athenaeus, 46)—a fact which indicates that it was used for therapeutic purposes, and not, as Pausanias says, only as a receptacle for thank-offerings of gold and silver coins. Models of restored limbs are mentioned in *IG* vii. 303, 67 ff., and 3498.

The great altar (D), according to Pausanias, contained five *μοῖραι*, by which almost everything connected with healing in Attic religion was brought into relation with Amphiaraos. The third *μοῖρα*—the principal division—belonged to the god himself, to his son Amphilochos, together with Hermes (as *ἡγήτωρ ὀνείρων* [?]) and Hestia (probably as the domestic goddess of Amphiaraos). The *σύμβωμοι* were associated as guests with the other parts as follows: Herakles, Zeus, and Apollo Paion (cf. the Delphic oracle in Demosth. *Mid.* 53) with the first; heroes and heroines with the second; Aphrodite (*CIA* iii. 136; *εὐδότητος ἱερῆς*), Panakeia-Iaso-Hygieia (representing the Athenian Asklepieion), and Athena Paionia (Kerameikos), with the fourth; and nymphs, Pan, Achelooos, and Kephisos (cf. 10 (b) above) with the fifth. It is quite certain that Iaso was here regarded as a guest (cf. the present writer's observations [Roscher, iii. 1486] in opposition to Usener). Aristophanes, in the *Amphiaraos*, speaks of her as a daughter of the Oropian deity, but in the *Ploutos* as the daughter of Asklepios; and as such she appears also upon a relief from the Asklepieion (*Ath. Mitt.* xvii. [1892] 243). Hygieia is first found in connexion with Amphiaraos in inscriptions of the 1st cent. B.C. (*IG* vii. 372, 412), and was therefore at that period no longer a mere guest, but a joint-possessor of the sanctuary. The healing god of Oropos had a subsidiary institution at Khamnoss (Mela, ii. 3. 6; and excavations [Δελφον, 1891, p. 116], which have yielded a relief representing Amphiaraos attending upon the sick).

Alexida, the daughter of Amphiaraos, is associated with the medical function by her very name. In Argos, her descendants, the *Ἑλάδαι* ('expellers'), were regarded as healers of epilepsy (Plut. *Quest. Gr.* 23).

20. Asklepios.—Considerations of space render it impossible here to treat of Asklepios in such detail as is due to the chief god of healing among the Greeks. The writer must, therefore, be content to emphasize some of the more salient points, and for the rest to refer to his more exhaustive artt. in Roscher, 'Asklepios' (1884), 'Hygieia' (1889), and 'Panakeia' (1902), and also the artt. 'Asklepios,' in *RE* ii. [1896] 1642 ff., and 'Epione,' *ib.* vi. [1906] 186 ff. The 181 localities connected with the cult of Asklepios (*ib.* ii. 1662 ff.) are only a selection from among the 410 which the writer had at his disposal, and which form a still more effective testimony to the enormous expansion of the cult.

i. *The origin and earliest spread of the cult, and the intrusion of Apollo.*—The earliest history of the cult has been distorted under Delphic influence, but may be reconstructed from the extant fragments. The name 'Asklepios' was traced by the Epidaurian writer Isyllos (3rd cent. B.C.) to *Ἀσκλη* ('*Aschl*') (*IG* iv. 950, line 51). Von Wilamowitz (*Isyll.* 93), combining this word with the Apollo *Ἀσκληδάτας* of Anaphe, proposes the primitive form *Ἀσκληαῖος*. Gruppe (*op. cit.* 1442 ff.) agrees with this, but believes that we have in Asklepios a confluence of two distinct personages—the one a light-god, *Asgl-apios* ('mild radiance'), connected with Apollo, and belonging originally to Gortyn, in Crete, the other an earth-god in the form of a snake (this is Welcker's explanation of the name, from *ἀσκέλαβος*), who became fused with the light-god in Bœotia and Phokis. The present

writer cannot accept these theories, and, refraining from etymological experiments, would only emphasize the originally chthonic character of Asklepios. This is indicated, indeed, by the facts that the leading symbol of Asklepios was the snake, that incubation was a characteristic feature of his worship, that a residue of the chthonic ritual (*δόλκαυρα*) survived at Titane, an ancient centre of his cult, and, finally, that he had a double in Trophonios, the cave- and oracle-deity of Lebadeia, who was once identical with Asklepios, but was detached from him at an early date, when the physician deity had not yet been individualized. According to the thoroughgoing investigations of O. Müller (*Orchomenos*², Breslau, 1844, p. 183 ff.), the original home of Asklepios was Thessaly, the devotees of his cult being the Minyæ. The tradition handed down by the separating theologians (Cic. *de Nat. Deor.* iii. 22 [57]; Joh. Lydus, *de Mens.* 4, 90), according to which his parents were Ischys, the son of Elatos, and Koronis, the daughter of Phlegyas, is of great importance, as it points to a period when Asklepios had no connexion with Apollo. His surrender of a divine for a heroic rank was effected by epic poetry. Thus in Homer he is merely the 'blameless physician' (*Il.* iv. 194), the disciple of Cheiron (219), and the father of the warrior-surgeon Machaon, *Τρίκκης ἐξ ἱπποβοῦτοιο* (202), with whom passages of later origin associate a brother named Podaleirios (ii. 732, xi. 833). On Homer's authority the Asklepieion of Trikkha was regarded as the most ancient of all (Apollod. *ap.* Strabo, 437), and the river Lethaios as the birthplace of Asklepios (oracle in Euseb. *Præp. Evang.* iii. 14. 6). But Phthiotis and Magnesia were also counted among his primitive habitations, as his education under Cheiron was associated with that region, while his place of birth was located by an *Eccc* in the Dotian campaign near Mt. Pelion. His earliest migration from Thessaly was southwards to the Minyean Northern Bœotia, and here Trophonios was worshipped in Lebadeia, and Asklepios in Orchomenos, Hyettos, Thespieæ, and Thisbe (*RE* ii. 1663). He was still a stranger to Southern and Western Bœotia, as also to Attica, to which his cult came from Epidaurus only in 420 B.C. On the other hand, he had at an early date gained a permanent footing in Phokis, which honoured him universally as its archagete (Paus. x. 32. 12). It was in Phokis, indeed, that the worshippers of Asklepios came into collision with the Apollinian circle at a period when, in consequence of the Dorian migration, the cult of Apollo had forcibly established itself in Delphi. The traditional implacable hostility of the Phlegyans towards the Delphic sanctuary indicates the violence of the conflict, which, however, ended in the triumph of Apollo.

A sweeping transformation of Minyean beliefs now ensued in favour of the intruder. Apollo becomes the father of Asklepios, Koronis the god's faithless mistress, Ischys the violator of his rights, but the offspring is taken into favour, so that he may henceforth act as the benignant physician of mankind under the patronage of the Delphic god; then, as he made bold to infringe the cosmic order by restoring the dead to life, he fell a victim to the bolt of Zens. Such is the substance of an *Eccc* (Hes. fr. 122-125 [Rzach]) which dominated the mind of Pindar (*Ol.* iii.) and the succeeding age (cf. *RE* ii. 1646) until the rising prestige of the Epidaurian *hieron* led to a revision of the Asklepiian myth which had the sanction of Delphi. In this new form of the saga the connexion of Asklepios with Thessaly, and the guilt and punishment of his mother—a feature obnoxious to his worshippers—were dropped, while Apollo is no longer the Delphic god, but the Epidaurian Maleatas

(8 (a) above). In the *hieron* the latter begets Asklepios by Aigle, daughter of an 'Epidaurian' Phlegyas, and surnamed Koronis, from her beauty, and makes him joint-possessor of the sanctuary. Such is the version given in the poems of Isyllos in the first half of the 3rd cent. B.C. (Wilamowitz, *Isyll.* 18 ff.; Kavvadias, *Fouill.* no. 7; *IG* iv. 950). A somewhat closer correspondence with the *Evee* is shown by the Epidaurian form of the myth in Pausanias (ii. 26. 7); here Koronis, being with child by Apollo, comes with Phlegyas from Thessaly to Epidaurus, and upon the 'myrtle-mountain' brings forth in secret the son who fills the world with his fame as soon as he reaches maturity (cf. *RE* ii. 667, s.v. 'Aresthanas'). This version likewise won the sanction of Delphi.

Asklepios, however, notwithstanding his having been thus forcibly grafted upon the Apollinian circle, maintained his independence in his own cult. This appears most distinctly from the type assigned to him in art, which, in contrast to the representation of the son of Leto, exhibits him as the fatherly friend of men, the *πατήρ ἰαχήων* (Herondas); hence the flippant jest of the sacrilegious Dionysius in *Cic. de Nat. Deor.* iii. 83 (on which cf. *RE* ii. 1679. 31 ff.). The cult of Koronis in Titane (Paus. ii. 11. 7)—a worship in conflict with the standpoint of the *Evee*—should also be noted.

ii. *The family of Asklepios.*—This comprises two groups, which must be kept distinct. (1) *His iatric retinue.*—Here we have his consort *Epione*, a personification of the 'mildness' which popular etymology found in his name (*Ἀσκλη-ἥπιος*). According to schol. *Il.* iv. 195 (*ἡ Μέροπος*), she was of Coan origin, but, on grounds of mythical chronology, we should probably read *ἡ Μεροπὶς* here. Epione is fully dealt with in *RE* vi. 186–190.¹ The first of his descendants are the two 'excellent surgeons' affiliated to him by epic poetry, viz. *Machaon* and *Podaleirios*, leaders of the men of Triikka, Ithome, and Cehalia (*Il.* iv. 202, ii. 729 ff.; for their worship in Triikka, see *RE* ii. 1662). Machaon had a separate cult only in Gerenia (Messenia), but in conjunction with his father was worshipped in several Greek Asklepieia, as, e.g., in Cos, at Pergamos, and doubtless also at Mitylene (cf. *RE* ii. 1660). Podaleirios is almost unknown in European Greece, but in Caria he is the ancestor of a famous family of Asklepiadæ, and, according to v. Wilamowitz (*Isyll.* 51), was originally a Carian hero. In the West his cult reached Apulia (dream and healing oracles among the Daunians). The assertion that the two brothers were the sons of Poseidon (frag. of the *Porthesis*) was negatived above (4); the fragment in question is nevertheless of interest as the earliest Greek record of the separation of surgery (Machaon) and internal medicine (Podaleirios). A legend of Syrna (Steph. Byz. s.v. *Σύρνα*) relates that, when the king's daughter had fallen headlong, Podaleirios restored her by bleeding.

The outstanding iatric figure of the group is *Panakeia*, a personification of the popular notion of the miraculous all-healing herbs already mentioned in connexion with Cheiron and Herakles. As the daughter of Asklepios, she represents his omnipotence in the sphere of healing (on the centres of her cult, and her presumably Rhodian origin, cf. Roscher, iii. 1484 ff.). In the ancient oath of the physicians she alone—as a healer—is contrasted with Hygieia; subsequently she was associated with a sister named *Iaso* (Hermipp., Aristoph. *Plout.* 701), and, at length, with the addition of *Akeso*, we find a triad of female healers (Athenian relief, reproduced in Roscher, iii. 1490;

inser. from Piræus, *CIA* ii. 1651; the Pæans of Ptolemais and Athens). The medical retinue of Asklepios is completed by the dæmons *Ianiskos* (schol. *Plut.* 701), *Akesis* (Epidaurus; Paus. ii. 11. 7), and *Telesphoros* (Pergamos): the last-named is viewed in very different lights (Welcker, *Götterlehre*, ii. [1860] 740; Wroth, *JHS* iii. [1882] 283 ff.)—most recently as an incubation spirit by Ziehen (*Ath. Mitt.* xvii. [1892] 241). The hymn in *CIA* iii. 171 identifies him with Akesis; Pausanias (ii. 11. 7) does likewise, but at the same time identifies him also with Euamerion (see below, under (2)). Incubation is represented by *Hypnos* in Sicily (Paus. ii. 10. 2), Athens (*Ath. Mitt.* ii. [1877] 242. 4), and Epidaurus (Blinkenberg, *ib.* xiv. [1889] 390).

(2) *The personifications of health and *εὐεξία*.*—The leader of this group is the maiden *Hygieia*, who by many recent writers is wrongly regarded as a healing goddess. The name has a history in part independent of the Asklepiian cult. It is found c. 500 B.C. as an epithet of the goddess of the Athenian citadel (cf. above, 2). The hymn of Licymnios (*Frag. Lyr. Gr.* iii. 599) makes reference to a maternal Hygieia, extolling her as 'the Queen of the august thrones of Apollo,' but does not connect her with Asklepios. It is clear also, from Cornut. 16, that in some places a Hygieia was associated with Hermes (cf. 12, above). Finally, a maidenly figure designated Hygieia is found among the personifications of Euxenia (Eudaimonie, Harmonia, Tyche) on vase-paintings (Jahn, *Archäol. Beiträge*, 215; *AZ*, 1879, p. 95), and beside a youth named Klytios on the vase of Meidias (Inghirami, *Mon. Etrusc.*, Fiesole, 1824–27, v. 2, pl. xii.). But, while the representation of an abstract conception might be employed in many ways, the creation of a figure in the cultus is a different matter. Usener (*Götternamen*, 169) supposes, however, that an independent goddess designated Hygieia was known in Athens long before the settlement of Asklepios there (420 B.C.)—a theory which the present writer refutes in Roscher, iii. 1486. If the point in question be the medium in which the worship of the goddess of health first emerged, there are good reasons for believing that this was the Asklepiian cult. That Hygieia reached Athens in company with Asklepios in 420 B.C. is an assured fact (cf. the final revision of the relative inscription, *Ἐφημ. ἀρχαιολ.*, 1901, p. 98). If she did not come from Epidaurus (where her connexion with the *hieron* in the 4th cent. B.C. is now attested by *IG* iv. 1329), she must have been brought from some other Asklepieion in the Peloponnesus—Titane perhaps; her ancient worship there is discussed in Roscher, i. 2776. As the guardian of health, she forms a real contrast to the medical retinue of Asklepios, and accordingly she does not appear in the healing scene of the *Ploutos*; while, again, in the well-known *Paian*, a recension of which (4th cent. B.C.) was recently discovered in Erythra, she is, for the sake of emphasis, put last of all. The sick might approach her with petitions, the restored with thanksgiving; her name in itself signifies the stewardess of the supreme blessing of life. But this blessing was not merely a thing to be regained by healing, but rather—what was of more importance for national life—a thing to be safeguarded and strengthened by rational conduct. Now, such an idea had a natural attraction for the race that instituted the athletic contest and the gymnasium. That it was familiar also to the followers of Asklepios is shown by a saying which Plato puts into the mouth of the physician Eryximachos, viz. that Asklepios, taking account of the two tendencies of the animal body—*ἐπὶ τῷ ὑγίειῳ* and *ἐπὶ τῷ νοσώδει*—presides over the whole art of medicine on the one hand and over gymnastics and agriculture

¹ Lampetia, who is named as the wife of Asklepios by Hermippus, would fall rather into the second group. See below, p. 552a.

on the other (*Symp.* 186 B, and cf. Jüthner, in his ed. of Philostr. *περὶ γυμναστικῆς*, p. 37 ff.). This agrees with the fact that at Olympia on the table of Kolotes, upon which the wreaths of the victors were laid, Asklepios and Hygieia are seen confronting Agon and Ares, i.e. are honoured as patrons of athletic and martial contests. What artistic type, then, would be chosen to represent the patroness of the Olympic games? That, surely, of a maidenly figure, at once lithe and tense. Moreover, in all other cases where we can with certainty identify her figure, she appears as a maiden. Modern archaeology has given rise to a certain vacillation between the matronly and the maidenly form, but to the Greeks themselves 'the world under her escort bloomed in the vernal radiance of the Charites' (Hymn of Ariphron, *Poet. Lyr. Gr.* iii. 597). In the Athenian Asklepion, the inscriptions of which speak of Hygieia as the only other partner in the sanctuary, she is sometimes (*Ath. Mitt.* ii. [1877] plates 16 and 17; Roscher, i. 2782) depicted beside her father—who is seated—as leaning against a tree and without a symbol; in other cases she is usually represented as waiting upon the sacred snake, to which she offers food, or more frequently a bowl. The statement that a bowl (of gold) was bequeathed by Olympias to the image of Hygieia worshipped in Athens (Hyperid. *pro Euxen.* § 19) prompts the conjecture that that figure exhibited her in the act of giving the serpent drink. In Epidauros, again, Blinkenberg has discovered the figure of a snake drinking from a bowl as an accessory symbol upon an offering (altar or base) dedicated to Hygieia (*IG* iv. 1329). Hygieia is the only member of the Asklepiian circle who shares his exaltation as the *Σωτήρ* of the world (Roscher, i. 2784).

The fact that *Aigle* becomes a daughter of Asklepios seems to be due to the affinity between the ideas of health and light (cf. the Laconian epithets of Asklepios: *Ἀγλαόπτης*, *Ἀγλαήρ*), and it is worthy of note that in this capacity she makes her first appearance in the curious genealogy of Hermippos, in which also her mother is not Epione, but the Heliad *Lampetia*. The children of Asklepios, according to Hermippos, are the two physicians of the *Iliad*, Iaso, Panakaia, and Aigle: Hygieia is not named, *Aigle* probably taking her place. In the recently discovered *Paian* of Erythrae (v. Wilamowitz, 'Nord-ionische Steine,' *ABAW*, 1909, p. 37), Aigle has been substituted, 'not very happily, for the Attic Akeso in the triad of female healing goddesses. In a painting by Nikophanes of Sicyon (Plin. xxxv. 137) Hygieia and Aigle, Panakaia and Iaso, were grouped about Asklepios.

A male counterpart to the goddess of health is found in *Eumemerion*, the Titanian spirit 'of good days' (Paus. ii. 11. 7), and, if Telephoros be identical with him, as Pausanias says, he too would, of course, be assigned to the second Asklepiian group (cf. ii. (1), at the end).

iii. *The therapeutics of the Asklepiaia*.—The connexion between the therapeutics of the Asklepiaia and secular medicine, as also the practice of incubation, and the alleged difference between the procedure of the Greek and that of the Roman period, were dealt with in our first section. Suffice it now to refer briefly to the three records of healing which still survive, wholly or partly, in redacted forms. (1) The Epidaurian *iamata*, consisting entirely of miraculous stories, are vitiated by the cardinal defect of making incubation a mere external accessory. In this respect, however, they find a precedent in the *Ploutos* of Aristophanes. (2) The Maffaian inscriptions of the Insula Tiberina retain the mantic nature of incubation, recording the bestowal and practical application of dream-oracles. Here, however, the remedies prescribed

are wholly of a magical kind, and medicine in the proper sense is entirely absent (cf. Deubner, *dc Incub.* p. 44 ff.). (3) A fragment of a redaction of pathological narratives from Lebena has been discussed to good purpose by Zingerle (*Ath. Mitt.* xxi. [1896] 67 ff.), who errs, however, in classing this redaction with the Epidaurian *iamata*, for the extant fragment records prescriptions given by the god in dreams, and the cures due to their application. This work, therefore, like the surviving originals of Granios and Apellas, would fall within the category of genuine therapeutics.

B. *HEROES*.—The heroes of Greek mythology fall into two groups, according as they derive their origin from the cult of the dead or from the worship of gods. In the former case they tend to acquire a malicious character, and need to be propitiated by acts of worship; such are, e.g., the heroes who, according to Hippokrates, *περὶ ἰερῆς νόσου*, i (vi. 362, Littré), were supposed to cause epilepsy. The second class, embracing deities whom the poets reduced to the status of heroes, are, on the other hand, disposed to be helpful to man, especially in the healing of disease; and hence, in pseudo-Hippokr. *περὶ διατρῆς*, 89 (vi. 652, Littré), they are invoked together with the apotropaic gods and Ge. Those of this group who retained their place in the cultus as deities were dealt with in the preceding section (A. 13, 15, 19, 20); but Achilles, though originally a water-demon (Usener, *Göttern.* p. 14), was there omitted, because he was worshipped exclusively as the hero of the Trojan legend.

i. *Achilles*.—The attempt to interpret his name in a medical sense (Gruppe, *op. cit.* 71. 616) has proved futile. His sanctuary in Brasia is mentioned by Pausanias (iii. 24. 5), not as having any real connexion with the Asklepiaion situated there, but merely as being in its vicinity. His dream-shrine in the island of Leuce, opposite the delta of the Istros (Arrian, *Periplus*, 23), was specially concerned with the coasting traffic. He appears as a healing hero only in Tertull. *de Anima*, 46, where he heals Leonymus the boxer. In the Trojan legend he is a pupil of Cheiron (*Il.* xi. 832), cures Telephos with the rust of his spear (*ὁ τρώσας ἰάσεται*), and bandages Patroklos upon the Sosias bowl (Müller-Wieseler, *Ant. Denkmäler*, Göttingen, 1854, i. pl. 45, no. 210).

2. *Protesilaos*, a healing hero in the Thracian Chersonese (Philostr. *Heroic.* ii. 15).

3. *Hektor*, according to a Delphic utterance (Lykophron, 1205, and schol. 1194), was an *ἀρωγὸς λοικμῶν τοξενιμάτων* in Thebes.

4. *Antikyreus*, the eponym founder of Antikyra in Phokis, and the discoverer of the *ἑλλέβορος μέλας*, with which he cured Herakles of madness (Ptol. Chenn. 2, p. 14 [Roulez]; Steph. Byz. s.v. *Ἀντικυρεὺς*). The hellebore decoction was said to have been discovered by the Phokians, and was used for both cathartic and therapeutic purposes (schol. Nic. *Alexiph.* 483; Strabo, 418).

5. *Melampous*.—The Aeloid Melampous was the founder of a famous family of seers, upon which Amphiaros (A. 19)—as his grandson—was grafted (*Od.* xv. 225 ff.). In Pherekyd. fr. 75 he is the hero of an interesting popular legend, which tells how, in consequence of having his ears cleansed by snakes, he became proficient in prophecy and the language of animals, and by a magic remedy (*ὁ τρώσας ἰάσεται*) enabled Iphiklos to regain his lost virility. He delivers the Proetids from their madness—either supernaturally, *θεοῖς ἀπορρήτοις καὶ καθαρμοῖς*, in the Artemision at Lusi (Paus. viii. 18. 7), or by rational means, viz. a bath in the fountain of the Anigradian nymphs (A. 10 (a) (2), the waters of which acted powerfully against skin-eruptions and herpes. On the latter alternative, the Proetids must really have suffered from an affection of the skin, as is actually said, indeed,

in the version given in the Hesiodic *Catalogue*, fr. 28, 29 (Rzach). According to Theophr. *Hist. Plant.* ix. 10. 4, Melampous treated their case with the ἑλλέβορος μέλας, which was in consequence also called *melampodion*. Rohde (*Psyche*, Freiburg, 1894, p. 339. 3) holds that this remedy was purely cathartic; but it may quite well be regarded as therapeutic, and, therefore, as a counterpart to the *panakes* of Cheiron and others. There was a cult of Melampous at Ægosthena, but there was no practice of divination connected with it (Paus. i. 44. 5). According to Imhoof, Blumer, and Gardner ('Numismatic Commentary on Paus.', *JHS* vi. [1885] 58), the circular building upon a coin of that locality may be a representation of his shrine (ἱερῶν).

6. *Apis*.—According to Æsch. *Suppl.* 261 ff., Apis, the eponym founder of Apia (Argolis), and the *λαρμόμαντις παῖς* Ἀπλόωνος, came from Naupaktos, and freed the land from monsters ἄεσι τομαλίοι (cathartic *pharmaka*). He was subsequently (Porphyr. *de Abst.* iii. 15) identified with the Egyptian Apis (cf. Vernicke, *RE* i. 2310).

7. The descendants of the Asklepiad Machaon (A. 20, ii. (1)).—This group is composed partly of originally local spirits or heroes, as, e.g., his sons Nikomachos and Gorgasos, who in the time of Pausanias (iv. 30. 3) were still active as healing heroes—especially for paralysis—at Phare in Messenia (cf. Roscher, i. 625; *RE* ii. 1668), and partly of those whose sole function it was to found Asklepieia, such as Sphyrros in Argos, Polemokrates in the Thyreatis, and Alexanor in Titane (Paus.), though in the last-named locality the founder, according to schol. Arist. *Plout.* 701, was Alexenor, the son of Asklepios. On the family of Asklepiads which traced its descent from Nikomachos—and to which Aristotle belonged—and on the Asklepiads of Rhodes, Cnidus, and Cos who sprang from Podaleirios, see *RE* ii. 1684.

8. Molpadia Hemitheia, daughter of Staphylus, and, after her death, heroine of a dream-oracle at Kastabos (Thracian Chersonese) much frequented by invalids; she had also an obstetric function (Diod. Sic. v. 62, 63).

9. Darron, ὁ ὑπὲρ τῶν νοσούντων εὐχονται among the Macedonians (Hesych. s.v. Δάρρων). G. Curtius (*Greck Etym.*, 1897, no. 315) connects the name with *θαρρεῖν*. Usener (*op. cit.* 171) refers it to the Thracian tribe of the *Δερραιοί*. To the latter pertains also the interesting Macedonian large silver coin with the legend *Δερρονικός(ν)*, which denotes, not a king (Head, *op. cit.* 180¹), but a nationality (Gäbler, *Zeitschr. für Numismat.* xx. [1897] 289).

10. *Eurostos*: *Τέμενος ἥρωος Εὐρώστου* on the Bosphorus (reference in Usener, *op. cit.* 171. 64, to Dionys. *Peripl.* 111).

Copious examples are furnished by Attica:

11. *Amynos*.—The 'healing hero Alkon,' whose existence had been assumed solely upon the ground of a textual emendation in *Vit. Sophocl.* 11, proposed by Meineke, may now, in view of the findings of A. Körte in *Ath. Mitt.* xxi. (1896) 311 ff., be set aside, and his place given to Amynos, a hero who had a sanctuary on the western declivity of the Akropolis even before the cult of Asklepios came to Athens, and in whose service Sophokles acted as priest. In this capacity the poet gave the Epidaurian deity a hospitable reception, and was in consequence surnamed *Δεξιων*, and honoured with a hero-cult. On the objects discovered in the sanctuary of Amynos, cf. Körte's earlier art. 'Bezirk eines Heilgottes,' in *Ath. Mitt.* xviii. (1893) 231 ff., with pl. xi. (a large leg with prominently marked varicose vein, and held in the arms of a bearded man on a smaller scale—probably the person healed).

12. The *ἥρωος λαρός* in the vicinity of the Thesieion

¹ But cf. the remarks of Head in his 2nd ed., p. 201.

(Demosth. *Or.* xix. 249, xviii. 129; *CIA* ii. 1, nos. 403, 404 (ὁ ἐν ἄρτει)).

13. *Toxaris*, as a *ἥρωος ξένος*, specially concerned with fever (Lucian, *Scyth.* 1). He is not a fabrication of Lucian (Sybel), but the object of an actual hero-cult (Deneken, in Roscher, i. 2483 f.).

14. *Aristomachos*, *ἥρωος λαρός*, in the Dionysion at Marathon (Bekker, *Anecd. Græc.*, Berlin, 1814, i. 262).

15. A *ἥρωος λαρός* ὄνομα Ὀρεσίβιος (Oresibios?) ἐν Ἐλενσίμῳ (Bekker, *op. cit.* i. 263).

Reference may be made, by way of appendix, to healing statues and figures representing persons who in their lifetime had nothing to do with medicine, and yet were invested by popular belief with miraculous powers, as, e.g., the statue of the Olympic victor Theagenes in Thasos (Paus. vi. 11. 3; Lucian, *Deor. Conc.* 12), that of the pancratiast Pulydamas at Olympia (Paus. vi. 5; Lucian, *loc. cit.*), that of a *ἥρωος Νερυλλίως* in the Troad (Athenag. 26), those of Alexander (Paris) and Peregrinos Proteus in Parium (Athenag. 26), and that of the Corinthian general Pelichus in the private possession of Eukrates (Lucian, *Philopsend.* 18 ff.). On these, see Weinreich, *op. cit.* 137 ff.

LITERATURE.—This is indicated in the article.

E. THRÄMER.

HEALTH AND GODS OF HEALING

(Roman).—I. *IN THE INDIGENOUS RELIGION*.—In the sphere of medicine the vitally religious element in the Roman character manifested itself in a partiality for supernatural, and a disparagement of rational, modes of healing. The fact that, in spite of the Roman tendency to deity special and unique occurrences and conditions, we find no distinctive gods of disease among the deities of the *Indigitamenta* (see the alphabetical list by R. Peter, in Roscher, ii. 188 ff.) is in reality an indication of the favourable conditions of health prevailing in the ancient agricultural State. Moreover, there were originally no special deities of healing among the *Di indigetes*, the gods of the State religion; and the Romans, like the Greeks of primitive times, were content to rely upon the evil-averting powers of the indigenous deities generally. Thus *Mars*, the god of war, is entreated in the *Carmen Arvale* (*CIL* i. 28) to avert pestilence: 'Let no plague come upon the people; be content, O fierce Mars!', and in the ancient prayer in Cato, *de Agri Cult.* 141 (the diction of which, however, according to R. Reitzenstein, in *Strassburger Festschrift*, 1901, p. 152, has been modified by the redactor), the same deity is implored not only to prevent bad weather, failure of crops, etc., but, in particular, 'uti tu morbos visos invisosque defendas averruncesque; uti tu . . . pastores pecuaque salva servassis disisque bonam salutem valetudinemque mihi domo familiaeque nostrae.' With these prayers should be compared the shorter supplication in *de Agri Cult.* 134 (to Janus and Jupiter) and 139 (addressed quite generally to all the gods: 'si deus, si dea es'). The ancient Italian *Salus*, again, is not a goddess of health or healing, but the personification of the general welfare (cf. G. Wissowa, *Religion u. Kultus d. Römer*², Munich, 1912, p. 132 ff.). She was, no doubt, confounded with the Greek *Hygieia* in later linguistic usage, but this can hardly have been the case in the official religion. In the frequently mentioned 'augurium salutis' (the leading reference is Dio Cass. xxxvii. 24, where *salutis* is improperly rendered as *ὕγεια*, instead of *σωτηρία*), the word is not a proper name at all, but simply an appellative. The attempt of Böttiger ('Medizinische Schlangengaukelei,' in *Kleine Schriften*, i. [1837] 127 ff.) to connect the 'augurium salutis' with the snake-feeding *Hygieia* is altogether fallacious. The ancient Latin goddess *Strenia* is regarded by Preller (*Röm. Myth.*³,

Berlin, 1883, i. 234) as a deity of healing, but only on the ground of an untenable etymology in Augustine, *de Civ. Dei*, iv. 11. 6: 'strenuum facere'; the *strenae* ('twigs of trees') given as New Year's presents, however, were made use of, quite generally, as symbols of prosperity (cf. Plaut. *Stich.* iii. 2. 8).

On the other hand, the ancient *Carna*, shown by Wissowa (*op. cit.* 236) to have been a goddess of the under world, has a distinct connexion with matters of health. According to Macrobius *Sat.* i. 12. 31, she presides over *vitalibus humanis*, and she is entreated 'ut iecinora et corda quaeque sunt intrinsicis viscera salva conservet.' From the free poetic treatment of *Carna* by Ovid (*Fasti*, vi. 101-196) it would appear at least that she practised the beneficent magic arts of which the presumptive *ἰατρός* prides herself in the *Hymn to Demeter* (see above, p. 548 f.). The *Striges* who thirst for children's blood she exorcizes by touching the doorposts three times with a twig of arbutus, sprinkling the threshold with water, holding the entrails of a pig two months old (*Fasti*, vi. 161: 'cor pro corde, pro fibris fibras'—a representative spell; cf. Riess, 'Aberglaube,' in Pauly-Wissowa, i. 33 (c)), and, finally, placing a hawthorn-branch in the window as a prophylactic. The particular deities of woman's life—Juno as *Lucina*, *Diana Opifera* in Nemi, and the host of special goddesses (*Mene*, *Alemona*, etc.) named in the *Indigitamenta*—can only be alluded to here.

A specific goddess of disease is found in *Febris*, whose personification bears forcible witness to the antiquity of the fever-plague in the plains of the Tiber. Belief in disease-demons was, no doubt, quite common among the Babylonians (see above, p. 541*), and the Egyptians seem to have had a 'special god of fever' (*Pap. Ebers*, ed. Joachim, pp. 87, 93—unless the reference be rather to a god of 'inflammations'); these, however, were hostile beings, whom the people sought to exorcize by spells. The Roman *Febris*, on the other hand, was well disposed towards man, and prospered the remedies used for the disease. That these remedies were *magical* in their nature is shown by the 'remedia quae corporibus aegrorum adnexa fuerant' (Valerius Maximus, ii. 5. 6), obviously amulets for reducing fever, which after use were dedicated to *Febris*. There was an ancient sanctuary of *Febris* on the Palatine Hill, and two of later origin on the Quirinal and the Esquiline respectively. In later times she assumed the specialized forms of *Febris Tertianae* and *Febris Quartanae* (*CIL* vii. 999, xii. 3129). Magic remedies for both kinds of fever are given in Plin. *HN* xxviii. 46.

Among the *Dii Novensides* of Italian origin there were two who are clearly associated with healing. (1) One of these was *Fortuna*, an ancient Latin goddess whose cult is said to have been established in Rome by Servius Tullius. The chief seats of her worship were Antium and Praeneste, in the latter of which she had, as *Primigenia*, an ancient oracle for sortilege. The cult of *Primigenia* did not reach Rome till 199 B.C. She was not, like the Greek *Tyche*, the goddess of fate who rules over all things, but was personified in innumerable special forms, as, e.g., 'Fortuna huiusce diei,' 'Fortuna equestris,' 'Fortuna publica' and 'privata,' 'Fortuna Collegii Fabrum,' 'Fortuna balnearum,' and the like (Wissowa, *op. cit.* 262), including 'Fortuna salutaris' (*CIL* vi. 184, 201, 202), which may have quite a general reference, but as found in the votive inscription of Godesberg (*CIL* xiii. 2, no. 7994) is certainly connected with healing: 'Fortunus salutaribus [note the pl.] Aesculapio Hygiae.'—(2) The Etruscan, originally Falterian, *Minerva* (Wissowa, *op. cit.* 247 ff.) had a temple on the Capitoline Hill even prior to the institution of the Capitoline triad (*Festus*,

p. 257, s.v. 'Quinquatrus'). As the goddess of the handicrafts and the arts she was, in particular, the patroness of physicians (L. Preller, *Regionen der Stadt Rom*, Jena, 1846, p. 133), with which fact, it is true, the remark of Cicero in *de Div.* ii. 123 ('sine medico medicinam dabit Minerva') is strangely at variance. There was a temple of *Minerva Medica* upon the Esquiline (Wissowa, 255, n. 1). A sanctuary of *Minerva Memor et Medica Cabardiacensis* (near Placentia) is often referred to in inscriptions (*CIL* xi. 1292-1310); here she prescribed medicines, healed diseases of the ear, and even condescended to restore the growth of the hair.

So much for the indigenous gods and those taken from the neighbouring peoples—deities who were worshipped in old-fashioned Roman or, it might be, in Italian forms, and, above all, in forms borrowed from the Etruscan religion.

II. GREEK INFLUENCES.—These in the end effected the Hellenization of the Roman religion. Of the gods thus borrowed from the Greeks, however, only a few are connected with our subject.

1. *Apollo*.—The *Sibylline Books*, which cannot be dissociated from the worship of Apollo, began, so far as we know, to make their influence felt in Rome in 496 B.C. It is certain that these books, as also the Roman worship of Apollo, came from Cumæ, as is confirmed by the fact that on special occasions the Senate caused sacrifices to be offered to Apollo in his temple there (cf. Wissowa, *op. cit.* 293 f.). The first Roman temple of the god was erected, 'pro valetudine Populi Romani,' at the Porta Carmentalis in 431 B.C., on the occasion of a plague (Livy, iv. 25). Here, accordingly, the Greek god of pestilence (see above, p. 547*) found a footing in Rome; the Romans worshipped him as *Apollo Medicus*, and in the prayer of the Vestal Virgins (Macrobius *Sat.* i. 17. 15) he is actually invoked as *Apollo Pæan*. His worship in Rome, as among the Greeks, consisted of expiations and ceremonies—supplication and procession (Livy, xxvii. 37), *lectisternium* and the appointment (by Etruscan rites) of a 'dictator clavi ligendi causa' (Livy, vii. 2, viii. 18). A Roman dedication to *Apollo Salutaris et Medicinalis* occurs in *CIL* vi. 39. According to Pliny, *HN* xxvi. 93, a remedy for abscess, compounded of seven ingredients, was given to the naked patient by a naked virgin—each of them spitting the while—with the words: 'negat Apollo pestem posse crescere cui nuda virgo restinguat.' Nakedness was believed to be a magic preventive (cf. Riess, *loc. cit.* i. 35). It is probable that the vogue of Apollo as a healing god began to decline when the cult of *Æsculapius* was adopted in Rome (291 B.C.), but in conjunction with the latter and *Salus* (*Hygieia*) he received votive gifts as far down as the pestilence of 180 B.C. (Livy, xl. 37).

2. *Æsculapius* and *Hygia*.—The reception of Asklepios,¹ the Greek god of the healing art, into the Roman pantheon is worthy of note as the first instance of the Romans having adopted a cult from the Greek mother-country. The occasion was the pestilence of 293 B.C., the *Sibylline Books* having recommended that Asklepios should be brought from Epidaurus to arrest it. The Romans did not at first go beyond a three-days' supplicatio (Livy, x. 47), but in 291 they sent an embassy, headed by G. Ogulnius (Valer. Vict. *Vir. Ill.* 22), to Epidaurus, whence it brought back 'anguem in quo

¹ The Latin form *Aesculapius* (*Aisculapius*, *CIL* vi. 2, from the *Insula Tiberina*) goes back to *Aesculapius* (*CIL* iii. 1766, from *Narona*) or *Aisculapius* (*ib.* xi. 6708), which corresponds exactly with the older Epidaurian form *Αἰσκαλαπίος*. The intrusive vowel between *c* and *l* in the common Lat. form has a Gr. counterpart in the Thessalian **Ἀσκαλαπίος*, which is to be inferred from certain proper names (Pauly-Wissowa, ii. 1642).

ipsum numen esse constabat.¹ A temple was erected to the god on the Insula Tiberina at the place where the serpent, quitting the ship, reached land (Livy, *Epit.* xi.). So ran the primitive, artless legend, of which we are still reminded to this day by its monumental counterpart in the boat-shaped outline of the island (cf. the ancient engraving in B. Gamucci, *Antichità di Roma*, Venice, 1580, p. 173; M. Besnier [*L'île Tibérine dans l'antiquité*, Paris, 1902, p. 42 = *Bibl. des écoles françaises*, lxxvii.] dates the artificial shape of the island from the end of the Republic). In the diffuse account given by Ovid (*Metam.* xv. 622 ff.), and also in Val. Max. i. 8. 2, the founding of the temple is extolled as an event of great importance, but in point of fact the cult seems to have played a very modest part in the Republican period.²

As regards the internal activities of the Roman branch of the Epidaurian cult, our information is scanty. That they corresponded very closely with those of the parent institution appears from the reference of Festus (p. 110) to the sacred snakes and dogs kept in the island;³ and, in view of the fact that the Epidaurian *iamata* (see above, p. 542^b) were compiled shortly before the adoption of the cult in Rome, we may perhaps infer that here too the craving for the miraculous had asserted itself with considerable force. But there is nothing to show that incubation, which was certainly taken over with the cult itself,⁴ had lost its mantic character (as in the *iamata*). In the *Curculio* of Plautus, the scene of which is laid in Epidaurus, but which is full of allusions to Roman conditions, the procurer to whom the god has paid no attention in his dream is supplied with an improvised interpretation of it (246 ff.). This goes to prove that there were professional 'conjectores' in the Roman Aesclepieum in the time of Plautus, but direct evidence of incubation is not found until the Flavian epoch (*CIL* vi. 8: 'Flavius Antyllus *ex viso* Aesclepio aram consecravit'; cf. *ib.* 14, 'Sancto Aesculapio *ex jussu* numinis dei'). A dedication (discovered in front of the *Porta Appia*) by a

certain M. Ulpianus Honoratus to Aesculapius and Hygia, 'pro salute sua suorumque et L. Julii Helicis medici, qui curam mei diligenter egit secundum deos,' is of special interest as showing the co-operation of physician and deity. A Greek parallel to this is found in a dedication to Asklepios in Kibyra: here the person healed gives thanks to the god, to the Tyche of the city, and to Dionysios, the doctor who had treated him (*Wiener Akademie, Anzeiger*, xxx. [1893] 104). The 'Maffean inscriptions' of the Insula Tiberina date from the age of the Antonines, and are a redaction of four narratives of healing (*CIG* 5980); an interpretation will be found in L. Deubner, *de Incub.* Leipzig, 1900, p. 44 ff. We read in these that oracles were bestowed in dreams, and practically applied, but the directions given are of a purely theurgic character. A revival of interest in the cult of the god of healing in the reign of Antoninus Pius is indicated by the latter's memorial coin bearing a representation of the legendary foundation of his temple (H. Cohen, *Méd. impér.* Paris, 1880-85, ii. 271, fig. 17; cf. also the reliefs in *Röm. Mitt.* i. [1886], plates 6 and 7).

Of the diversified figures in the retinue of the Epidaurian god (see above, p. 551), 'Hygia' alone appears in Rome. She was there also called 'Valetudo,' and is first mentioned in connexion with the year 180 B.C. (Livy, xl. 37, where the 'Salus' conjoined with Aesculapius must, of course, be meant for Hygia); while she is referred to as Salus also in Ter. *Heccyra*, 338. Conversely, the temple of the early Roman Salus is erroneously called *ναὸς τῆς Ὑγιᾶς* by Plutarch (*Cato Major*, 19). The confusion is explained by the affinity of the terms *salus* and *valetudo*. From the Roman Salus, however, the daughter of Aesculapius is explicitly distinguished in *CIL* vii. 164 (Chester) as 'Salus ejus'; other inscriptions usually call the latter 'Hygia' (*CIL* vi. 17-19, and 20234—the last dating from the reign of Antoninus Pius). It is true that in the temple erected by Marcus Aurelius and L. Verus in honour of the divine father and daughter in Lambres (Numidia) we again find the dedication 'Aesculapio et Saluti' (*CIL* vii. 2579a). But the proper Latin designation of the daughter of Aesculapius, as regards both her name and her character, is *Valetudo* (*CIL* iii. 7279), and the goddess is so designated on a denarius of Acilius (see precd. col., note 2), as the name 'Valetudo' which is there attached to a female figure attending to a serpent can refer only to Hygia. Compare also *CIL* v. 6415 (Pavia): 'Aesculapium Bonam Valetudinem Martem'; and viii. 9610 (Mauretania): 'Bonae Valetudini sacrum.'¹ A pre-Hellenic goddess 'Valetudo' occurs (*CIL* ix. 3812 [Marsi]).

The diffusion of the Aesculapian cult through the vast Roman Empire cannot be traced here, but reference may be made to a remarkable representation of the god in a military type. He appears thus on several reliefs from Syria (Jalabert, in *Mélanges de la faculté orientale*, Beirut, i. [1906], pl. i. 1 and 2, pl. ii. 3-5: 'Aesculap en officier romain'). This is to be explained by reference to the worship of the emperors. The Cameo St. Albans (C. W. King, *Antique Gems and Rings*³, London, 1872, ii. 9) depicts an emperor (probably Constantine) in warlike attire, and bearing the eagle of Jupiter

¹ This was the specific mode of founding branches of the Epidaurian cult; cf. Paus. ii. 10. 3 (Sicyon), iii. 23. 6 (a consignment of sacred snakes intended for Cos, but retained in Epidaurus Limera).

² It certainly comes but little into notice: see dedications to Apollo, Aesculapius, and Salus (i.e. Hygia), in 180 B.C. (Livy, xl. 37); head of Aesculapius on denarii of Acilius the mint-master (L. Babelon, *Monnaies de la République rom.*, Paris, 1885, i. 107, no. 11); figure of 'Valetudo' (i.e. Hygia) feeding the snake (*ib.* 106, no. 8); mural paintings in 'Aesculapii aede vetere' (Varro, *de Ling. Lat.* vii. 57; 'vetere' here in contradistinction to the later sanctuaries in the iv. and v. *regiones* of the city); the Naples marble statue of Aesculapius (illustration in Roscher, i. 634) is said to have been found in the Insula Tiberina; probably, too, the group of Asklepios and Hygieia executed by Nikeratos (who flourished in the period of the Attalids), and afterwards transported to Rome (Plin. *HN* xxxiv. 80), had found its place in the temple of the island (the charming group in the Vatican [illustr. in Roscher, i. 2779] is in all likelihood a copy of this); the architectural work of two aediles 'de stipe Aesculapii' (*CIL* vi. 7). The statue of Antonius Musa, physician to Augustus, was set up 'juxta signum Aesculapii' (Suet. *Aug.* lix.), perhaps on the Insula Tiberina.

³ The statement of Festus that the sacred dogs were kept 'quod is [Aesculapius] uberibus canis sit nutritus' is a distortion of the Epidaurian legend, and is probably due to Tarquinius (cf. *Lact. Div. Inst.* i. 10. 1).

⁴ From the dream-oracles of Faunus, as described in Verg. *Aen.* vii. 71 ff., and, in imitation of them, in Ovid, *Fasts.* iv. 644 ff., Preller (*Rom. Myth.*³ i. 382) argues that incubation was practised in Rome long before the cult of Asklepios was established there, but in n. 2 Jordan refers to the Hellenizing spirit of Roman poetry, while R. Heinze (*Vergil's epische Technik*, Leipzig, 1903, p. 172, n. 2), on the ground that the alleged Faunus oracles would be an isolated phenomenon in early Italian religion, denies that the descriptions in question had any foundation in fact. The present writer is of the same opinion. The earlier oracular system of the Romans depended upon Etruscan influences, and incubation was unknown in Etruria. What is said of dream-oracles in Hellenized Rome outside the Aesculapian cult—the oracular statues of the Danaids in the temple of the Palatine Apollo (founded 23 B.C.), and the healing oracles of the Roman Dioscuri (schol. on Pers. *Sat.* ii. 56)—is open to doubt (Wissowa, *op. cit.* 270, n. 2).

¹ Hygia had a rival in *Bona Dea*, a Greek goddess worshipped in Argolis, Sparta, and Tarentum, under the name of Damia, and in Rome identified with Fauna—*Bona Dea* (Wissowa, *op. cit.* 216). *Bona Dea*, in her temple on the Aventine, which was restored by Livia, seems to have exercised the function of a healing goddess, inasmuch as her devotees stored in this temple 'omne genus herbarum ex quibus antistites dant plerumque medicinas' (Macrobi. *Sat.* i. 12. 26). Wissowa (218, n. 1) associates with her the descriptions *CIL* vi. 72: 'Bonae Deae Hygiae,' and viii. 20747: 'Dea [Bona Valetudo]'; but, on the other hand, the *Bona Dea* there referred to may be an epithet of the daughter of Aesculapius.

and the snake-entwined *hasta*. King wrongly interprets the latter symbol in a Christian sense ('the old serpent' overcome by Constantine). But in reality we find here a transference of the regular symbol of Asklepios to the deified emperor as the incarnation of the *Σωτήρ*. This is the type used in the Syrian reliefs, and these accordingly portray the face in all cases as beardless.

Concluding note on Cato the Censor.—Did the Romans, who, as we know, assumed at first a suspicious and adverse attitude towards Greek rational medicine, frame a popular medicine of their own for ordinary needs, in addition to their general supplications to the gods? And was Cato, the opponent of Greek culture, and especially of the Greek physicians (Plin. *HN* xxix. 14; Plut. *Cato Major*, 23), a champion of such indigenous medicine? That he was versed in medical matters is shown by his having inserted rules of health in his *Præcepta ad M. filium* (Plin. vii. 171, xxviii. 260; Plut. *loc. cit.* 23; Priscian, vi. 84), and by the portions of his extant work *de Agri Cult.* which deal with medical dietetics. It is a common opinion that he derived his knowledge of such things from the medical practice of the Italian peasantry (W. S. Teuffel, *Gesch. der röm. Litteratur*⁴, Leipzig, 1882, § 55; Jordan, in Preller, i. 243, n. 3; F. Münzer, *Beiträge zur Quellenkritik der Naturgesch. des Plinius*, Berlin, 1897, p. 68: 'Die primitive Heilkunst des sabinischen Bauern'), and the curious spells recommended for dislocations (*de Agri Cult.* 160) possibly come from a similar source. But the 'apsinthium Ponticum' prescribed as an amulet against footsoreness (159) is an exotic feature. To what source, again, shall we trace the long excursus (156-7) dealing with the dietetic and therapeutic merits of the various kinds of cabbage? The *Brassica Pythagorea* (157. 1) cannot well have belonged to the pharmacopeia of the Sabine peasantry, and the Greek name *Silphion* is used only in this section (157. 7), while in ch. 116 Cato employs the Lat. term *lasericum*. Finally, his remark that the assimilation of food tends to prevent perspiration of the veins has a distinctly professional ring. Now, we know that the Cnidian physician Chrysippus (M. Wellmann, in Pauly-Wissowa, iii. 2510, no. 15), who accompanied Endoxos (see above, p. 541^b) on his Egyptian journey of research wrote a monograph on the various kinds of cabbage, and showed in that work the great importance of the species for therapeutics and dietetics (Plin. *HN* xx. 78). And that this Cnidian work was, directly or indirectly, Cato's source for chs. 156-8¹ appears not only from Cato's partiality for the cabbage tribe, but also from the curious prescription (157. 14) recommending *Brassica 'erratica'* with water for fistula, and with honey for sores—precisely the same directions having been given by Chrysippus (in Plin. *HN* xx. 93). It is quite possible, too, that the *Commentarius* (Plin. *loc. cit.*), or the *γερμανέων ὑποβήρημα* (Plut. *Cato Major*, 23), according to which Cato was wont to treat himself and his family in sickness, may have been simply that work of Chrysippus. The Cnidian school of physicians fostered the relations between medicine and *τὸ θεῖον* (see above, p. 544^b), and was on that account more acceptable to the religious sentiment of the Roman people than were the Hippocratic with their purely scientific methods. But it is certainly a curious circumstance that the chief opponent of Hellenism in Rome should thus turn out to have been the adherent of a mere *Græculus*.

LITERATURE.—This is given in the article. Cf. also the authorities cited in the 'Greek' article. E. THÄMER.

¹ The purgative prescribed in 158—a mixture which with its numerous ingredients reminds us of Egyptian pharmacy—belongs also to the excursus, as it includes *Brassica*.

HEART.—I. Heart, soul, and life.—In primitive thought the liver was probably regarded as a primary seat of life, but the heart generally came to be looked upon in this way, as its physiological functions were better understood. The beating of the heart, as well as the cessation of that beating at death, may well have prompted man to associate life itself with it or to regard it as the seat of the soul, or, where several souls are assigned to man—a not uncommon belief—as the seat of one, usually the chief of them. The result has generally been that 'heart' signifies not only the physical organ, but also soul, life, intellect, emotion, will, and the like; and it is not always easy to say whether or not a metaphorical use of the word is intended. This is illustrated in the common phrase 'died of a broken heart,' which goes back to a time when grief of itself was supposed to act injuriously upon the physical heart.

The Ahts believe that the soul, a sort of mannikin, lives in the heart and head.¹ The Caribs, who believed in several souls, assigned one to the heart, or regarded it as the chief soul.² The Tongans thought that the soul extended through the body, but was mainly manifested in the heart, the pulsations of which were the power of the soul. The right auricle of the heart was the seat of life.³ Among the natives of Nias a belief in three souls exists, and the third and most important of these is *nosododo*, 'the soul of the heart.' The heart is the source of all feeling, understanding, and emotion.⁴ The Batak sometimes assign souls to each place in the body where pulsation is observed, one of these being the heart.⁵ In Celebes the Gorontalo believe in four souls, two of which are in the heart.⁶ Examples may also be cited from Africa, where generally the heart is looked upon as a vital centre, and the seat of emotion, passion, etc., of the intellect, or of the soul. 'Soul' and 'heart' are expressed by one name among the Ba-huana.⁷ Where several souls are believed in, the heart is the seat of the life-soul, and it may be drawn thence by sorcery, whereupon the body dies. The Baluba of S. Congo think that death is caused by a messenger of Kabezza-Mpungu compressing the heart until it stops beating.⁸

Among peoples of a higher culture, similar beliefs prevailed. The Egyptian word *ab*, in its narrower sense of 'heart,' signified longing, desire, will, wisdom, courage, etc.; and the heart was regarded as the seat of life, and of all its activities. There was also a soul connected with the heart, the *hâti*, or 'heart soul,' or 'the state, or quality, or mental condition of the heart.' Both of these, the *ab* and the *hâti*, could be stolen, with the result of death, and the deceased is represented adoring the *hâti*, which may also have been that which was weighed in the judgment. Five chapters of the Book of the Dead concern the preservation of the heart, without which the deceased was helpless, but with which his soul would not be 'fettered at the gates of Tuat.' But it was liable to be stolen by various 'stealers of hearts'; hence the greatest precautions were taken to prevent this; e.g., a scarab amulet was often placed over the region of the heart.⁹

With the early Babylonians the liver had been regarded as the seat of the soul or life, and it was only at a later period that a knowledge of the part played by the heart was arrived at. Many traces of the earlier idea survived, 'liver' being used instead of, or along with, 'heart' to signify the seat of life; and hepatoscopy was constantly practised. A frequent refrain in the hymns is, 'May thy heart be at rest, thy liver be appeased.'¹⁰

¹ G. M. Sproat, *Scenes and Studies of Savage Life*, London, 1868, p. 173 f.

² J. G. Müller, *Amer. Urrel.*, Basel, 1855, p. 207 f.; C. de Rochefort, *Iles Antilles*, Rotterdam, 1681, p. 429.

³ W. Mariner, *Tonga Islands*², London, 1818, ii. 99, and *passim*.

⁴ A. E. Crawley, *Idea of the Soul*, London, 1909, p. 120 f.

⁵ *Ib.* 112.

⁶ A. C. Kruijt, *Het Animisme in den ind. Arch.*, The Hague, 1906, p. 13.

⁷ E. Torday and T. A. Joyce, *JAI* xxxvi. [1906] 291; cf. A. B. Ellis, *Ewe-speaking Peoples*, London, 1890, p. 99 f., *Yoruba-speaking Peoples*, do. 1894, p. 120 f.

⁸ H. H. Johnston, *George Grenfell*, London, 1908, ii. 642.

⁹ E. A. W. Budge, *Osiris and the Egypt. Resurrection*, London, 1911, ii. 131, 137, *Book of the Dead*, chs. 20-30.

¹⁰ M. Jastrow, *Aspects of Rel. Belief and Practice in Bab. and Assyria*, New York, 1911, pp. 149 ff., 196, *Rel. of Bab. and Assyria*, Boston, 1898, p. 324.

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—they still survive in Turkey; and the sentence pronounced against their founder was renewed for their punishment at intervals for a century and a half. Dabbling in the Kabbala brought not merely impostors, but also great teachers, under the ban. Indeed, the more eminent the Rabbi, the more surely does he seem to have been marked out as a fit subject for excommunication; and, on the other hand, the more obscure the Rabbi, the more ready he was to excommunicate. 'The sword and shield of ignorance and deceit'—thus a Jewish writer characterized the ban. Even to show brotherly feeling for the Karaites was an offence visited with disciplinary measures, as the famous Nachman Krochmal of Lemberg was to learn, less than a century ago. Naturally, the sect of the *Hasidim*, who exalted mysticism above conformity with the Rabbinic Law, were banned as heretics. Heresy, moreover, meant anything that was new, however innocent or positively advantageous to the Jewish cause. Thus the Synagogue, or rather its representatives in certain places, declared some of its best friends anathema—a Dr. Frankl, for example, who fifty years ago desired to found in Jerusalem an asylum for children on modern lines, and, a little later, even Sir Moses Montefiore, who advocated the teaching of European languages in the schools of the Holy City. Nor has such disciplinary procedure been quite unknown in England in recent times.

A species of excommunication was launched by the orthodox Rabbinate in 1842 against the West London Synagogue, which had just been established on principles antagonistic to the Talmudic theory of the divinity of the Oral Law. The faithful were warned against using the Prayer Book of the new congregation, and against communion with them in 'any religious rite or sacred act.' Members of the congregation were denied Jewish burial. After protracted negotiations, the ban was removed seven years later.

At the present time excommunication is virtually extinct among Jews in civilized countries. More than a century ago the famous Paris Sanhedrin, convoked by Napoleon I., anticipated matters by virtually declaring the rite of excommunication obsolete. It is significant that a note to the chapter on the ban in the latest editions of the *Shulhan Arukh*—the authoritative text-book of orthodox Judaism—declares that the prescriptions set forth in that chapter have no longer any validity (*Yorê Deah*, sect. 334). Even the most devoted adherent of the Rabbinic Law is forced to admit that these severe disciplinary measures are at once superfluous and contrary to the spirit of the age. Self-preservation is obtainable by milder and more rational means in these days of emancipation and equality. Moreover, the Jew imbued with the modern spirit recognizes, as fully as does his Gentile brother, that severity, when exercised by a religious body, defeats its own purpose by hardening the offender in his offence and confirming him in his heresy. It is a glaring self-contradiction, seeing that a Church, which necessarily claims to

be the Divine representative, should have, as its first characteristic, the Divine qualities of mildness and leniency. Thus the ban has again and again served the cause of irreligion, instead of militating against it. Moses Mendelssohn (18th cent.), the protagonist of the modern Jewish temper, has well expressed this view:

'Excommunication and proscription,' he says in the introductory pages of his *Jerusalem*, 'are directly contrary to the spirit of Religion. What!—shut out a brother who would share in my edification and lift his heart with mine to God! If Religion permits itself no arbitrary punishments, least of all can it use this spiritual torment which, alas, only they can feel who are truly religious. . . . Every society, it is urged, has the right to exclude; why not a religious society? My answer is that this is just where a religious society forgoes an exception. Subject to a higher law, no society can exercise a right which is directly opposed to its fundamental aims. To excommunicate a dissenter, to expel him from the Church, is like forbidding a sick man the dispensary. It is to repulse the patient whose need of medicine is all the greater because he is not conscious of his need, but deems himself in good health.'

In fairness, however, to the Synagogue, a distinction must be drawn between the needs of modern times and those of the past. There were occasions when the duty of safeguarding the existence of the community, and even of the religion, seemed to justify resort to excommunication. It possessed terrors which every other disciplinary expedient lacked. It seemed to be the only means of enforcing respect for authority and obedience to its injunctions. It supplied an effective weapon for preserving morality, personal and public, and it often averted ill-will and persecution at the hands of the general population, by preventing internal disputes from obtaining the publicity of the secular courts. Under threat of excommunication, Jewish litigants would bring their quarrels for adjustment to the *Bêth Din* (the Ecclesiastical Court) or to the *Kahal* (the Congregation), instead of taking them for settlement to the magistrates. But these considerations do not excuse the action of certain Rabbis, of the mediæval period more particularly, who resorted to excommunication as an easy means of crushing their personal opponents. Nor, in the case of heresy, do they avail against the objection raised by I. H. Weiss (*Dor Dor*, v.), that excommunication, even when actuated by the purest motives, did more harm than good by rendering Jewry in twain at a time when concord and union were its greatest need. Moreover, as he adds, instead of extirpating the evils at which it aimed, it often rooted them deeper. The heretic, who might have been won back by lenity and forbearance, was strengthened in his heresy, and still further estranged, by severe methods.

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DISEASE AND MEDICINE.

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DISEASE AND MEDICINE (Introductory and Primitive).—Of the two methods, the 'direct' and the 'interpretative,' by which we can study the beliefs of different peoples as regards the methods of communication, diagnosis, and treatment of disease, each has its difficulties. To

'interpret' the beliefs of a people from observation of their practices is always a dangerous procedure. The same practices may exist among widely distant peoples; yet we can never safely conclude that they are the expression of precisely the same beliefs, or that apparently identical be-

liefs have the same meaning and have been reached by the same lines of development. Take as an example certain conceptions of the cause of toothache.

In the Banks Islands, says Codrington (*The Melanestians*, Oxford, 1891, p. 193), there was 'a young woman of my acquaintance' who 'had a reputation for power of healing toothache by a charm which had been taught her by an aged relative deceased. She would lay a certain leaf, rolled up with certain muttered words, upon the part inflamed; and, when in course of time the pain subsided, she would take out and unfold the leaf, and show within it the little white maggot that was the cause of the trouble.' We turn now to the Ainu of Japan. 'For toothache a nail is heated to white heat and held on the affected tooth for a few seconds. This is said to kill the insects which are supposed to be the origin of the malady' (J. Batchelor, *The Ainu and their Folklore*, London, 1901, p. 293). Lastly, in ancient Assyria and among the modern Arabs of Mesopotamia, toothache is attributed to a worm.

It would be tempting to suppose that the notion of worms or insects being the cause of toothache has had the same origin in Melanesia, Japan, and Asia Minor; but all modern anthropological research points to the danger of drawing such a conclusion from a single thread of evidence. We can hope to arrive at the relationship between individual beliefs only by carefully comparing the entire cultures among which they are found; we can hope to arrive at the ultimate meaning and origin of a belief only by observing and 'directly' questioning the peoples among whom it is found, and especially neighbouring and more primitive peoples who may reasonably be considered as connected, by race or by environment, with them. On the other hand, it is difficult, if not impossible, to obtain, by the 'direct' (or questioning) method, the beliefs of a people in relation to such a subject as disease. For its ideas are apt to be nebulous and in a state of flux; old practices often persist, but receive a changing explanation as in course of time the beliefs of the community develop; even old beliefs may be preserved and unreflectingly maintained, despite the fact that they are logically inconsistent with the newer beliefs which an advancing civilization or the adoption of a foreign culture brings with it.

In the face of these difficulties, we shall confine ourselves in this article mainly to the study of disease among definite primitive peoples. We shall examine specific instances instead of working with uncertain generalities. Such a study will show us how illness has been attributed first to personal (human or demonic) and later to Divine resentment, as the ideas of human magic, of interference by evil spirits, and of godhead have gradually developed. Comparing primitive and more advanced peoples with one another, we shall see how treatment becomes more complex as different diseases are allotted to different evil spirits, demons, or gods. Different medicine-men are invoked; definite remedies become attached to definitely recognized diseases. Many practices, employed even by the most primitive peoples, are continued, but are regarded in quite another light as civilization advances. They are found to have a good effect, although the original cause for their application is no longer believed in. Thus massage, or counter-irritation, and often steam are employed by many primitive peoples with the object of driving out the evil matter or spirit or the demon of the disease from the patient's body. The evil is kneaded, stamped, or pounded out of the body; or it is rubbed in a definite direction—usually from the part affected towards the feet, where it escapes; or cuts are made in the skin, causing some flow of blood. Again, the conviction felt by the patient that the medicine-man is able by his actions to control the evil spirits of disease is responsible, more than any other factor, for the success of primitive therapeutics. So, too, among the most advanced communities, despite their changed beliefs, massage, hydrotherapy, and, at all events

until recently, venesection persist as useful practices. As regards suggestion, it is open to question how far the most modern treatment, or the most 'specific' drug, can restore the patient to health, unless he has been induced to believe in its efficacy. Among primitive peoples, knowing the name of the evil spirit, using archaic language, summoning medicine-men from another tribe, are frequently important factors in effecting a cure. Among ourselves, a physician is held of slight account who cannot give a name to his patient's illness; he still writes his remedies in a dead language; and his reputation is apt to be greater abroad than at home. Although the medicinal aspect of treatment has come more and more to the front, in no part of the world can the magical aspect be said to have altogether disappeared.

1. Australia.—Turning now to various primitive peoples in order to study their practices (and, so far as is possible, their beliefs) in regard to the causation and treatment of disease, let us first examine the native Australians, who have been studied with considerable care by Spencer and Gillen (*The Native Tribes of Central Australia*, London, 1899, *The Northern Tribes of Central Australia*, do. 1904), by W. E. Roth (*North Queensland Ethnography*, Bulletin 5, Brisbane, 1903), and by Howitt (*The Native Tribes of South-East Australia*, London, 1904).¹ Among these peoples disease is attributed to some evil magic prepared by one man who wishes to harm another. A widely spread method of causing disease is for the sorcerer to take an *irna*, a stick or bone less than a foot long, sharpened at one end, the other end being usually tipped with porcupine-grass resin (S.-G.^a 534). Any native may act as a sorcerer. He goes away into the bush with his *irna*, which he places in the ground, muttering some such curse as 'May your heart be rent asunder!', 'May your head and throat be split open!' Then he goes back to his camp, returning later to fetch the *irna*, which he hides somewhere near his camp. He bides his time until he can get near enough one night to distinguish his victim without being himself observed.

'He then stoops down, and turning his back towards the camp takes the *irna* in both hands and jerks it repeatedly over his shoulder, muttering the same curses again' (S.-G.^b 455). This pointing of the *irna* causes disease, and even death, unless the evil magic which has proceeded from the point of the *irna* can be removed. Usually a string is attached to the wax end of the *irna*, and this the sorcerer often burns in the fire to ensure the death of his victim. There is general agreement, among Europeans resident in primitive communities, that natives are extraordinarily open to suggestion, so far at least as the transmission of disease is concerned. A man who believes that magic has been exercised upon him 'simply lies down, refuses food, and pines away' (S.-G.^a 537). The writer was assured, during his stay in the Torres Straits, that it was sufficient if a man recognized as having magic power made a slight movement towards another who was aware that the former owed him a grudge. The victim would then go home, refuse food, and become seriously ill. This pointing with the bone extends, with variations, throughout Australia. In some cases a spear is used with a human bone attached to it (R. § 139 f.); in others a human fibula is used (H. 358), often along with human fat (*ib.* 361), which the medicine-men are believed to be able to abstract from other victims and to use as a powerful aid (*ib.* 367). In place of the bone, stones may be employed (S.-G.^b 467; H. 378); pieces of quartz, especially in the crystalline form, are believed to be capable of projecting magic towards the victim.

¹ For brevity's sake, we shall refer to these books as S.-G.^a S.-G.^b, R., and H. respectively.

(H. 357, 365; R. § 114). Certain stones may, from their mythical history, be exceedingly powerful (S.-G.^b 472, 469). A dead man's hair made into a girdle or worn in a necklace, lengths of opossum string (R. § 131), a dead man's head-band (S.-G.^a 538), a knout made of strands of vegetable fibre (^b 469), a woman's head-band (*ib.* 465), are also powerful objects for evil magic. Ant-hills are similarly employed; a curse is muttered into an ant-hill, which is then secretly brought back to the camp, pounded, and scattered over the ground in the camp to which the victim belongs (*ib.* 466).

There is little specialization of function among most of the Australian tribes in the causation of disease; any man can magically affect another. It is more particularly in the treatment of disease that special 'medicine-men' play a part (S.-G.^b 479). These may wear special emblems, and be compelled to submit to certain regulations in diet and training (*ib.* 485). The medicine-man may suck or knead the affected part (H. 380, 384). He may merely lay on his hands (*ib.* 382), or make passes (S.-G.^b 484), or he may suck at or bind round the patient strings of human hair or opossum fur (R. §§ 155, 156). His object is commonly to produce from the patient's body the bone or the stone which the patient's enemy has employed against him (S.-G.^b 480; H. 379, 384); he sometimes produces a bit of quartz or charcoal, or a marble, and often spits out blood somehow obtained from his own mouth after prolonged sucking. In some cases the patient is bled (H. 385), or is treated with herbs, etc. (*ib.* 384). Or it may be enough for him to place a woman's head-band upon his stomach, whereupon the evil magic passes into the band, which is thrown away into the bush (S.-G.^b 474).

There are several minor features also described by observers of the Australians; but the above may be considered to be typical of this people generally, and will suffice to show broadly their attitude towards disease. It is clear that disease is commonly regarded in Australia as an evil sent by one man to another, which is transmitted through the magic influence of pointing some such object as a bone, a stone, or a piece of quartz. It enters the body in that form, and in the same form the evil must be withdrawn from the body.

2. *Torres Straits.*—Now let us turn to the Torres Straits, between Queensland and New Guinea. Here, too, the belief in the power possessed by individuals in causing disease is accepted. It is probable that in his heart each native knows that he cannot cause disease in another; nevertheless, he is always in terror lest some enemy may have the power of causing it in himself. In Murray Island, certain families were credited with influence over the growth of bananas, coco-nuts, or yams; others were supposed to direct the movements of sharks; many erected stone images in their gardens to protect their food. There arose a belief in disease as the sequel to robbery or some similar crime, and in the value of certain stones or marks as an indication and assurance that disease would follow if the objects protected by such signs of tabu were disturbed.

In Murray Island the writer obtained a description of a species of sorcery, called *maid*, which was formerly inflicted by one of the older men, in cases of hatred (*maid urkerlam*) or adultery (*maid koskerlam*). Finding his victim alone, the avenger takes up a chance stone, and, pronouncing over it some magic words (*zogo mer*) in a half-whisper, spits once or twice on it, and hurls it with great force to strike the back of his enemy. The latter falls to the ground, breathing heavily, and loses consciousness. The assailant and certain relatives who have accompanied him now close in on the prostrate body of the victim, and belabour it with

their clubs. They then rub the body with a mixture of herbs and coco-nut oil, and give the victim coco-nut milk to drink. The assailant, while rubbing him, tells him to go up a coco-nut tree and to fall down from it, breaking his leg; or he orders him to be bitten by a centipede (*esi*), which will produce fatal blood-poisoning; or he may tell him to go to a certain point in the island, and then to return home and die. The avenging party now withdraw to a short distance, leaving the man's knife and some bananas and coco-nuts beside him. When he awakes and begins to wonder what has happened to him, one of the hiding party takes up a stone and hits a tree near the terrified man. This makes him start, forget his bruises, and rush home, where he lies thirsty and comatose for some days. Then (according to the order of his assailant) he will say to his wife: 'I think I shall go up that coco-nut tree.' He goes up, falls down, breaks his leg, and perhaps dies. As the informant said, 'He no go up himself. Medicine [*i.e.* the magic ceremony] make him go up.'

A third feature in the Murray Islander's attitude towards disease consists in his treatment of it. A special group of men, the *lukup zogo le*, are concerned in curing disease. The sick man is placed on the sand-beach; his eyes are closed; no one may see the approach of the *lukup zogo le*. As he comes near, previously anointed with coco-nut oil by his attendant, he halts, and, spitting or blowing on his hands, performs a series of movements with them, as if he were sweeping something from himself towards the patient. The doctor firmly fixes his gaze upon the patient throughout these actions. Then he makes some movements of the leg and further movements of the arms. Finally, he shouts the word 'Sirar' in a shrill voice and rushes off to the sea, accompanied by the sick man. Some few hours after bathing, the *lukup zogo le* visits the patient in his hut and rubs him down with a decoction of herbs, sea-weed, and coco-nut oil. This massage is repeated daily if necessary, until the patient recovers (*Camb. Exp. Torres Straits*, v. 320-326, vi. 222-240).

3. *Melanesia.*—These three characteristics—the belief that sickness is a result of disregarding a tabu, the use of suggestion and interference with memory in causing injury or disease, and the more elaborate ceremonial in treatment of sickness—indicate a more advanced state of culture than exists throughout Australia generally. We may trace this state among the neighbouring people of New Guinea, in the Bismarck Archipelago, in the Solomon Islands, in the Banks Islands, and in the New Hebrides; it is a Papuo-Melanesian attitude towards disease. Thus, according to Seligmann (*The Melanesians of British New Guinea*, Cambridge, 1910), 'one or more . . . men who were sorcerers would follow their intended victim to his garden. . . . There he would be speared and clubbed, and, when dead [*i.e.* unconscious], cut to pieces. One end of a length of rope is then looped round the dead man's hand or knee, while the opposite end is steeped in certain "medicine" (*gorto*). The medicine passes along the rope and revives the victim. He is at first dazed, and does not know where he is or what has happened to him. He is told that he will die shortly, but he at once loses memory of this. He manages to crawl back to his village, where his friends realize what has occurred by his silly, feeble condition, although the victim can give no account of what has befallen him (*op. cit.* 170). At Savo, Guadalcanar, Malanta, and at Florida, in the Solomon Islands, the victim is met in solitude by his assailant, who 'seizes him, bites his neck, stuffs . . . [certain] magic leaves down his throat and knocks him on the head with an axe, but not so as to kill him.' The

charmed leaves make the victim forget the name of his assailant. He goes home, and dies two days later (Codrington, 206). In Lepers Island, New Hebrides, the assailant, after having overcome his victim, shoots a little charmed material at his head by means of a bow and arrow, whereupon he can remember nothing of the scene, but goes home to fall ill and die. His friends, seeing the wound, know what has happened to him (*ib.* 207).

In the central part of New Britain (Neu Pomern), Bismarck Archipelago, property is protected by tabu signs which, if disregarded, will cause headache, sores, etc., on the trespasser or the thief. If grasses are charmed and laid on the tree stems, madness will ensue. A human bone placed on the spot whence an object was stolen will cause the thief to waste (R. Parkinson, *Dreissig Jahre in der Südsee*, Stuttgart, 1907). In the Solomon Islands the disregard of tabu marks is similarly believed to result in disease.

Among the Eastern Papuo-Melanesians of New Guinea we find a further development of the view that disease is due to some emanation from the sorcerer. At Bartle Bay, for instance, disease can be caused 'by means of a "sending" projected from the body of the sorcerer or witch. . . . The "sending" is most commonly projected from the body of a woman, and after her death may pass to her daughter, or with her spirit or shade (*aru*) pass to the other world.' At Gelaria, in the same region of New Guinea, the 'sending' is called *labuni*. *Labuni* exist within women. They are said to wear petticoats, which, however, are shorter than those worn by the women of the district. They 'produce disease by means of a sliver of bone, or fragment of stone or coral, called *gidana*, which they insert into their victim's body. A fragment of human bone or a man's tooth is a specially potent *gidana*' (Seligmann, 640 f.). The *gidana* is thrown by the *labuni* at about sixty yards' distance; only the 'spiritual' part is said to enter the victim's body. The process of removing the spell can be performed only after the woman who sent the *labuni* has been appeased by presents. The treatment is usually undertaken by a man, and consists in rubbing the body until the *gidana* is extracted in the form of a material lump, which is sucked out through the closed hands of the masseur.

This notion of the discharge of an independent emanation or spirit from a living person, which itself lives as a petticoated individual, probably led to a further development in which disease is attributed to the influence of an evil spirit. Amongst the Roro-speaking peoples of New Guinea there is 'an ill-defined but real belief in demon-producing spiritual agencies controlled by a sorcerer' (Seligmann, 291). In the Gazelle Peninsula, New Britain, the most powerful of evil spirits is called *Kaia*; it dwells in high trees, dark caves, and other inaccessible places which are held sacred. Any one profaning one of these sacred places invites sickness or death. *Kaia* manifests itself in the form of a snake (P. A. Kleintitschen, *Die Küstenbewohner d. Gazellehalbinsel*, Münster, 1906, p. 337). So, too, in the New Hebrides, spirits are the chief objects of veneration; a sick man always attributes his illness to a spirit which he has offended by trespassing on some spot or profaning some object belonging to it, or which some enemy has invoked to bring illness (Codrington, 184).

In the Banks Islands, on the other hand, sickness is generally attributed to the resentment, not of evil spirits, but of ghosts of the dead. Also in Florida (Solomon Islands) it is a *tindalo*, i.e. a ghost of the dead,

'that causes illness; it is a matter of conjecture which of the known *tindalos* it may be. Sometimes a person has reason to

think, or fancies, that he has offended his dead father, uncle, or brother. In that case no special intercessor is required; the patient himself or one of the family will sacrifice, and beg the *tindalo* to take the sickness away; it is a family affair.' But, if he is uncertain of the ghost, if, for instance, his child is sick, he will summon a doctor, a *mane kisu*, to decide. 'The doctor called in will . . . chew ginger and blow into the patient's ears and on that part of the skull which is soft in infants, will call on the name of the *tindalo*, and beg him to remove the sickness' (Codrington, 194 f.). If this proves unsuccessful, another *tindalo* is addressed, or another *mane kisu* is summoned. The latter may undertake to get his own *tindalo* to intercede with the *tindalo* that is causing the illness.

Thus we are able to trace in Oceania a development, along two directions, of ideas as to the causation of disease. In the one, disease is attributed to some interference on the part of the dead. Probably this belief, traces of which appear even in Queensland (R. § 114), is correlated with the growth of the cult of the dead, which is so complex in certain parts of Melanesia. Thus, according to Seligmann (*op. cit.* 12 f.), one of the distinguishing characteristics of the Western Papuo-Melanesians, ranging from Cape Possession to Orangerie Bay, is the close association of certain institutions with the shades of the dead, whereas the Eastern Papuo-Melanesians show no fear of the visitation of the deceased, and no fear of supernatural beings. They attribute disease, as we have already seen, to the discharge of a spirit from a living person, thus closely agreeing with the general Australian view.

The other line of development in Oceania consists in the attributing of disease to an offended spirit, which has to be propitiated by sacrifice. This conception finds a far higher development in Polynesia. In Samoa, for example, disease was considered due to 'the wrath of some particular deity.' The high priest of the village ascertained the cause, and ordered some sacrifice on the part of the patient, e.g. a canoe or a piece of land. Or a confession was obtained from every member of the patient's family as to the crimes each had committed or the curses he had uttered in a moment of anger against the patient or some other member of the family (G. Turner, *Samoa*, London, 1884, p. 140). In Tahiti, again, the sickness of chiefs was attributed to the anger of the gods. 'Whole fields of plantains and a hundred or more pigs' would be taken to the temples, where prayers were offered up (W. Ellis, *Polynesian Researches*, London, 1831, i. 349). In Polynesia generally, disease was supposed to be a visitation from the gods.

'When a person was taken ill, the priest or physician was sent for; as soon as he arrived, a young plantain-tree, procured by some members of the family, was handed to him, as an offering to the god; a present of cloth was also furnished, as his own fee. He began by calling upon the name of his god, beseeching him to abate his anger towards the sufferer, to say what would propitiate him, or what applications would afford relief' (*ib.* iii. 37). Indeed, the medicine administered (e.g. powder or infusion of vegetable matter, hot baths, etc.) was 'considered more as the vehicle or medium by which the god would act than as possessing any power itself to arrest the progress of the disease' (*ib.* 47).

In Hawaii the medicinal herbs employed were believed to have been obtained many generations ago, by a man named Koreamoku, direct 'from the gods, who also taught him the use of them' (*ib.* iv. 335).

Thus, starting from the rude Australian belief that disease was sent by one individual against his enemy, we have reached the high Polynesian conception of illness as the result of sin against the gods. Instead of employing a medicine-man to remove the stone or bone which had entered the victim, the latter relies for his recovery mainly on prayers and sacrifices offered to the offended god. Throughout Oceania the various practices we have described are combined with therapeutic measures, the most important of which, alike in the causation and in the treatment of disease, unquestionably is suggestion. Massage, with or without the external application of herbs, is a very common treatment

prescribed. Bleeding is occasionally resorted to. Trephining was practised in the Polynesian Islands, and is met with in certain more western islands, e.g. Loyalty Island, Duke of York Island, Neu Mecklenburg (New Ireland), and in the Gazelle Peninsula of New Britain, for the relief of severe headache and epilepsy. Hot baths are often employed in Polynesia and in other islands, e.g. the Solomon Islands, the patient being wrapped in a cloth and seated over a pile of heated stones, which are covered with herbs and leaves. Fractured bones are set with splints of bamboo. Herbs are pounded, made into decoctions, and administered to the patient internally. Sometimes they are merely warmed in a coco-nut shell over the fire, and the steam therefrom, being applied to the patient, is expected to drive away the pain or the disease. Especially in Melanesia, into which the areca has been introduced from the Malay Archipelago where it is similarly valued, betel nut, betel leaves, and lime are considered powerful medicinal substances, both for internal and for outward application.

We have attempted to trace in vague outline various stages in the attitude of different Oceanic peoples towards disease. But, as we have already pointed out (p. 724^a), a people, when passing to a higher plane, does not discard the beliefs of the lower, but carries them with it, perhaps adapting them to suit its further development. Thus the Hawaiians, although they attribute disease to the gods, nevertheless believe that a sorcerer may be employed by a man to bring disease or death to his enemy. Consequently presents are made to the god, not only to appease his anger, but also to turn the disease back to the person who sent it (Ellis, *op. cit.* iv. 293). So the Samoan, despite his belief that disease is due to the wrath of a deity, protects his property by various tabus. For example, he may suspend a stick horizontally from one of his trees; this expresses 'the wish of the owner that any thief touching it might have a disease running right across his body, and remaining fixed there till he died' (Turner, *op. cit.* 186). Or he may bring some pieces of clam shell, 'erecting at the spot three or four reeds tied together at the top in a bunch like the head of a man' (*ib.*). This was recognized as expressing a wish that the thief might be seized with ulcerous sores. Thus punished, the thief would confess and make a present to the owner, who would send him in return some native herb as medicine.

We have already drawn attention to the Australian belief in the potency of human bones as a cause of disease. It is also met with in various parts of Melanesia and New Guinea. In the Banks Islands, where, as we have seen, illness is attributed to the ghosts of the deceased, a piece of human bone, belonging to the corpse of the ghost whose services are required, is applied to a fragment of food stolen from the victim. The whole is then 'charmed,' and allowed to decompose or to burn. In the same islands and in Florida (Solomon Islands) a piece of bamboo is stuffed with leaves, a dead man's bone, and other magical substances. The aggressor covers up the open end of the bamboo until he meets his foe, when he opens it and lets fly the magic influence against him (Codrington, *op. cit.* 204). So, too, among the Roro-speaking peoples of New Guinea (Seligmann, *op. cit.* 289) there is a widely spread belief that parts of newly dead bodies are of value in the preparation of charms, and amongst the Eastern Papuo-Melanesians about Milne Bay (*ib.* 551) sorcerers are supposed to open graves of the dead and to eat their bodies.

From the powers over disease attributed to the human dead we may pass to those attributed to living animals, chief among which is that of the

snake. The most potent of evil spirits in the Gazelle Peninsula of New Britain preferably manifests itself in the form of a snake. The man who wishes to injure another cuts up sea snakes and mixes them with leaves, roots, lime, and something—e.g. hair, blood, or footprints—connected with the victim. He places the whole in a short piece of bamboo, mutters secret words over it, and throws it into the sea, or buries it in the bush (Kleintitschen, *op. cit.* 343). In Pentecost Island (New Hebrides) delirium is attributed to a *mae*, a mysterious snake, which can be removed from the patient if he sits over the smoke of a heated coco-nut husk into which the medicine-man has breathed his charm (Codrington, *op. cit.* 200). If the *mae* snake took away a piece of food into the place that was sacred to a spirit, the man who had eaten the rest of the food would become ill as the fragment decayed. Among the Roro-speaking tribes of New Guinea disease is commonly attributed to snakes and to certain magical stones. The sorcerer is thought to be able to extract a deadly stone from the black snake, and this stone kills every person who touches it. Even the sorcerer, it is said, takes care not to come into immediate contact with it. In order to obtain a snake-stone, the sorcerer fasts in the bush alone for a fortnight, his food being limited to roasted bananas. He is particularly careful to avoid the sight of women. Sooner or later he dreams of the whereabouts of a very poisonous snake. Protecting his limbs by means of bandages, he proceeds to find and then to worry the snake, and 'as it glides away, it exposes a small stone,' which he picks up by thrusting against it a kind of fishing-spear provided with numerous closely set points. It is dropped from the spear into a bamboo tube. The snake-stone is described as being the size of a filbert, and red-hot, hissing and losing its power if dropped into salt-water. The snake can be sent by the sorcerer to bite his victim, if it has been allowed to smell the clothes or some other object belonging to the latter (Seligmann, *op. cit.* 28).

The charming of any objects belonging to the victim is believed to play so important a part in producing disease, not only in Oceania, but over the greater part of the world, that it is only natural for primitive man to take every care lest cuttings from his hair, parings from his nails, refuse from his food, his expectoration, excretions, footprints, or clothing pass into the hands of his enemy. In New Britain, for example, one or other of these objects (*panait*) is used by the sorcerer (*papait*), who murmurs an incantation over it, burns it with lime, and blows it from his hand into the air (Parkinson, *op. cit.* 118). In Tana (New Hebrides) a sorcerer, on seeing a discarded banana-skin, will pick it up and wear it all day in a leaf hanging round his neck, thus frightening every one into thinking, 'He has got something; he will do for somebody by and by at night' (Turner, *op. cit.* 320). In Florida (Solomon Islands) a man could make another ill by secretly taking a morsel of the latter's food, and throwing it into a spot which was the known habitat of a certain ghost of the dead.

4. Malay Archipelago.—Let us now pass to another people culturally and physically most closely related to the Polynesians, among whom, in consequence, we may expect to find disease attributed to gods or spirits, and cured by the offering of prayer and sacrifices to them—the inhabitants of the Malay Archipelago. Thence it will be possible to pass to the Malay Peninsula, and to trace the native ideas of disease westward to the Indian, and northward to the Mongolian, peoples.

Among the various tribes, and in the various

islands of the Malay Archipelago, there is considerable diversity in their beliefs; but, generally speaking, their spiritual world may be described as inhabited by the souls of animals (*e.g.* hawks, fowls, pigs, etc.), by spirits of the river, home, etc., and by the gods of thunder, harvest, life, death, etc., one of whom may be supreme over the rest. Consequently, of the two main causes attributed in this region to disease, evil spirits are one; and the treatment consists in effecting the departure of the evil spirit either by the persuasions of prayers and sacrifices or by the more cogent means of magical charms (Timor, Celebes, Bali, Java, Sumatra). The ceremony is often attended with much noise of gong- and drum-beating. Commonly, *e.g.* in Borneo, Ceram, Timor Laut, Buro (cf. Frazer, *GB*², 1900, iii. 97 f.), the evil spirit or the disease—for it is difficult to separate cause from effect—is induced to enter a well-provisioned model boat, which is made to sail down the river, carrying its noxious burden out to sea. This custom of sending away the disease down river extends throughout the Malay Peninsula to Burma, Siam, Annam, and even to Ceylon. Among the Milano of Sarawak the ceremony is performed in the following way:

The medicine-man (*orang bayoh*), having decided which spirit (*antu*) is responsible for the disease, returns home and prepares a log of sago palm cut in the image of that *antu*. This image, or *dakan*, may be enclosed in the model of a house or a boat. The patient's room is decorated with coloured cloths, flowers of the areca palm, and leaves fantastically plaited to represent objects, especially birds. A swing of rattan is erected, and plaited leaves connect it with the receptacle containing the *dakan*, so that the spirit may enter the latter after having been summoned by the *orang bayoh* to the swing. Several people may successively mount the swing, swaying their bodies in every possible attitude, to the sound of drums played in the background. Himself swaying on the swing, the *orang bayoh* recites 'almost in a monotone an incantation in the old language, addressed to the spirit, begging him to come down and take the sickness out of the patient's body' (Lawrence and Hewitt, *JAI* xxxviii. [1908] 391). 'The whole incantation is a succession of appeals . . . to the spirits, who come gradually nearer and nearer until the chant addresses them as if they were just outside the house, and finally as though present in the room' (*ib.* 408). At length the medicine-man falls from the swing apparently insensible; and after recovery he crosses to the patient, muttering incantations, sprinkling yellow rice, and waving over him an areca flower. Whenever the swing is unoccupied, an areca flower is hung across it. Finally, the patient himself may be transferred to the swing, and now, when the long-besought spirit is declared to be present, the patient and the *orang bayoh* proceed to enter the boat or house, the latter spitting betel-nut juice on the *dakan*, pouring water over it, and then sprinkling the drops over the patient's body, still murmuring incantations. Next day the *dakan*, provided with *padit* and yellow rice and adorned with areca flowers, is taken in procession to a stream, where it is left to rot in its receptacle, except when the receptacle takes the form of a boat. In that case, the boat is decorated with flags, manned with a crew, and armed with cannon all of pith, and it is made to float down the river or towed out to sea. No Milano, save the *orang bayoh*, will dare to touch the *dakan* after the performance of this ceremony. Generally there is a 'sound, logical connection between the sickness and *dakan* used,' the spirits of the water being responsible for dysentery, those of the air for headache and fever, those of the jungle for malaria, swellings of the legs, and other diseases attendant on jungle life (*ib.* 393).

This account is interesting as showing the complexity of the ritual which may be attained in endeavouring to drive the evil into a boat, which is then floated out to sea. The ceremony in one form or another is spread, as we have stated, throughout the Malay-peopled countries; it is also found in the Solomon Islands, which perhaps it reached with the advent of the areca or betel-nut from Malaysia. The above account is also interesting, inasmuch as it introduces certain new features—the use of the swing in driving out the disease, the transference of the disease (or evil spirit) to an image, the swooning of the medicine-man, and the attribution of different diseases to different spirits or causes.

In some cases a more simple and less public form of treatment is observed. The *dakan*, after having been incarnated by the spirit (*antu*), is taken by the medicine-man into the jungle, or hung on a tree, *i.e.* in the air, or placed in the river, accord-

ing as the spirit's real home is jungle, air, or water (*ib.* 390). In Amboyna a white cock is used, with which the patient is rubbed. It is then placed on a model boat and sent out to sea (Frazer, *GB*² iii. 99).

The swooning of the medicine-man brings us to another important feature in the cure of disease among primitive peoples. So far as we have considered the mental state of the individual at all, it has been that of the patient, not that of the doctor. It is true that in certain parts of New Guinea and Melanesia the medicine-man finds that his magic is more efficacious if he enters upon it in a fasting state or in other ways maltreats himself. But probably in these peoples there is not that mental instability which is to be found among the Malayan races, leading, under provocation, to loss of consciousness, auto-hypnosis, or other forms of change in 'personality,' such as are exemplified in running *amok* and in *latah*. The altered mental state of the medicine-man during his treatment of disease is well exemplified in the second of the two main ideas in regard to disease which prevail in the Malay Archipelago. One of these ideas we have already considered, *viz.* possession or visitation by an evil spirit. The other idea, also wide-spread throughout this region, extending to Burma, the Andaman Islands, Tibet, and Northern Asia (Tylor, *Primitive Culture*, 1873, i. 437), is that disease is due to a wandering of the soul. Just as in death the soul has finally left the body, so in sickness it is temporarily absent; therefore it has to be pursued and caught by the medicine-man. The writer happened to see this ceremony of catching the wandering soul during a chance evening stroll along one of the long verandahs of a house in Sarawak, Borneo. It has been picturesquely described elsewhere (Hose and McDougall, *JAI* xxxi. [1901] 184), and may be thus summarized:

The medicine-man, after chanting several verses with closed eyes, receives, in a dreamy state, his war-coat, shield, and sword (*parang*) from the hands of an assistant. With a short wand he sprinkles water on his *parang*, and then on each of the patients ranged before him. A young fowl is handed to him. Before cutting off its head, he prays its soul to take a message to the supreme god to remove all sickness and to preserve the people from harm. Then, waving the bird over each patient and murmuring some archaic formulae, he kills it and sprinkles its blood over the patients. With a second fowl in his hand, he describes the wanderings of his own spirit, how he has to cross a great river, where finally he meets with the soul of one of his sick patients. He lays his fingers on the head of one of the patients, and at that moment the patient's soul is believed to re-enter his body. At the same time he ties a piece of rattan cord round the patient's right wrist, to confine the soul to the body. The same performance is repeated in the case of the other patients, and then the medicine-man, after further chanting, during which his own soul is returning to his body, ties a piece of the string round his own wrist. The second fowl is now killed, and the blood-stained *parang* is wiped on the arm of the patient, and is used to cut off the ends of the wrist-string. The chanting continues, until suddenly the medicine-man gives a slight stagger and recovers consciousness. During the ceremony he had been heedless of his surroundings; and, from experiments which the writer knows to have been made at other times on such medicine-men, the claim is probably correct.

The use of strings in the cure of disease (from which perhaps the unthinking use of ligatures was derived) extends over other parts of Oceania (*e.g.* Queensland) which we have already studied. In the Gazelle Peninsula of New Britain, threads are prepared and are charmed in order to cure and to prevent disease. For the former purpose, they are worn round the affected part; for the latter, round the neck (Parkinson, *op. cit.* 119).

In the Banks Islands, a charm consisting of 'a bit of human bone, a fragment of coral, a splinter of wood or of an arrow by which a man has died,' is bound up with leaves and placed in the victim's path to strike him with disease. This charm, called *talamatai*, depends for its efficacy on the tying and binding tight with fibre (Codrington, *op. cit.* 204). The use of archaic incantations is also common in these parts. Frequently, words which are not understood are borrowed from other tribes. We have already stated that a man may

recognize his inability to cause disease, yet may fear the existence of that power in others. So, frequently a tribe may consider another tribe specially versed in the causation or treatment of disease, and may use its language or summon members of it to its aid.

In the Malay Archipelago, bits of wood, stones, or rags are sometimes drawn out of the patient's body, as demonstrating the cure of the disease. The medicine-man's chest will often contain curiously twisted roots, knotty sticks, pebbles, coloured marbles, pieces of quartz, etc., many of which, he claims, are revealed to him as medicines by benevolent spirits in his dreams. It is said that by means of the quartz crystal the medicine-man can diagnose the disease, see the soul, and catch it in its wanderings (Ling Roth, *Natives of Sarawak and British N. Borneo*, London, 1896, i. 273). Possibly this is another example of the susceptibility of the Malayan to auto-hypnosis (crystal-gazing).

Another important feature of Malayan medicine consists in the prominence of women doctors. There are instances of this feature throughout Oceania, but in certain parts of the Malay Archipelago it reaches its highest development. It is stated that in Borneo, for instance, at least in the past, a certain class of medicine-men, on adopting their profession, were emasculated, dressed in women's clothes, and thereafter treated as women (Ling Roth, *ib.* i. 270, 282). At the present day many cures in that country are undertaken by women, and most of the spirits invoked by the medicine-men receive the prefix *ini*, 'grandmother'—perhaps in accordance with the former importance of womanhood in the treatment of disease.

In the Malay Archipelago, betel-nut and pepper are the common outward remedies for almost any disease. Turmeric, honey, spices, and onions are taken internally. Cholera is treated by rubbing with *kayu putih* oil, and by water from certain sacred jars. Bleeding is practised; cupping is common—usually by means of a bamboo cane, the air within which is exhausted either by suction or by lighting a fire at the upper end. A wound may be cauterized by burning with a red-hot wire. A patient may be exposed to the smoke of a fire lighted below a bamboo grating on which he sits.

5. Malay Peninsula.—Coming now to the Malay Peninsula, we find that diseases become more distinctly personified as demons. Each disease *is* (not, *is caused by*) a different demon; the demons all arise from the thunder-god, who sends them by the winds, because of the sins of the people. There are ape-demons, black-dog-demons, tiger-demons, jungle- and river-demons, any one of which may cause disease. Certain new features, possibly of Indian or Chinese origin, begin to make their appearance here. Amulets now become important. Women obtain protection from disease by wearing combs, with inscribed patterns on them, and the patterns cause the disease-bearing wind to fall to the ground until the wearer has passed. A Semang woman may possess twenty or thirty such combs, which apparently depend for their efficacy on the particular pattern that they bear. The men's 'talismans are . . . incised on the quivers and charm-holders' (Skeat and Blagden, *Pagan Races of the Malay Peninsula*, London, 1906, i. 423). There is supposed to be some connexion between these patterns and the flowers which the good god, Ple, at one time allotted as remedies for the various diseases. The diseases were also thought to be laid by the winds on the parasitic plants of trees, between death and burial of the victims. Now, so runs the legend (which, however, must be accepted with caution), as new diseases have arisen since Ple dwelt on earth, and since the vegetable kingdom then apportioned by him to different

diseases is exhausted, such illnesses as smallpox and cholera 'have no rest, but, as soon as they have killed one man, fall straightway upon another even before the soul of the first has left the body' (*ib.* ii. 212). Among the Mantra (of Malacca) also amulets are much in use; they are made of pieces of turmeric or other substance, strung on a shred of bark, and worn round the neck, wrists, or waist. The Sakai have bamboos decorated with magical patterns, which are kept from the public gaze (*ib.* ii. 252).

Incense is used in the Malay Peninsula. The Blandas of Selangor exorcize the evil demon by burning benzoin and invoking the spirits (*hantu*) of tigers or elephants or monkeys to enter the medicine-man's body. The patient lies on his back within a shelter of *nibong*-palm leaves. As soon as the spirit enters the medicine-man, he brushes the patient seven times from head to foot with certain leaves, repeating an incantation which evidently is intended to expel the demon from the body. Among the Sakai the invalid is similarly beaten with leaves, after a censer of burning benzoin has been swung over his couch. The object here is to drive the demon within a cage which is suspended over the head of the patient (*ib.* ii. 257).

Trees also assume more importance. Disease may be cured by removing roots and stumps which are suspected to be the home of the demon, and by casting saplings into the jungle so that evil spirits may accompany them.

Among all the peoples of Eastern Asia sticks are of great value for the treatment of and protection from disease. Thus among the Ainus the demons of disease are propitiated by making them what is called *inao*. An *inao* is a whittled wand; groups of *inao* are collectively called *misa*. They are sometimes worshipped as messengers to the gods; sometimes they are regarded as offerings to the gods; or they may be regarded as mere charms. 'So, when a person falls sick, the elders often meet together and make *inao* of this [willow] tree. After they have been worshipped they are taken out to the sacred place and stuck up among the *misa*' (J. Batchelor, *op. cit.* 88). Sticks of elder about four feet high are set up in a village for protection from a prevailing epidemic (see art. AINUS). So, too, in the Andaman Islands, when an epidemic occurs, the medicine-man, who is called *oko-pai'ad* (lit. = dreamer), brandishing a burning log, bids the evil spirit retire, and plants before each hut stakes painted in stripes with black bees' wax, the smell of which helps to keep the demons at a distance (Man, *JAI* xii. [1883] 97). In the Malay Archipelago, sticks with fine shavings attached also play a similar part. Among the Tibeto-Burman peoples, a kind of arbour is erected before the sick man's house, made of grass and boughs supported on four poles, round which are hung little balls of split cane rolled tightly together. Strands of cane are stretched round the house from this arbour. The demons cannot pass through this barrier, consequently those already inside the house cannot be assisted by others from without (Shakespeare, *JAI* xxxix. [1909] 378 f.).

6. Africa.—In Africa illness is commonly attributed either to the machinations of an enemy or—more usually perhaps—to resentment on the part of the ghost of a dead man owing to the disrespect with which he has been treated. In West Africa, apparently, it may even be one of the sick man's own spirits which thus vents his annoyance on the body (Tylor, ii. 130). Almost universally, before treatment is begun, the name of the ghost must be discovered. Among the Nandi, this takes place by divination. Some near relative is sent for, who takes four (for a woman, three) stalks of the castor

oil plant or of millet, and tries to stand each upright in a fragment of pot containing water, which is placed near the patient's bed. As he takes each stalk, he calls on one of the deceased relatives of the patient by name. When one of the stalks stands erect, he exclaims, 'I have got thee, O medicine-man,' and the patient solemnly kicks it over with his big toe. The stalks are distributed in various places in or around the house; a little mud or sand mixed with the water is smeared on the forehead and throat of the invalid; 'the rest, together with some elensine grain, beer, and milk, is sprinkled between the bed and the door and also thrown outside the house,' the relative beseeching the ghost to depart in return for the food which is being offered it (A. C. Hollis, *The Nandi*, London, 1909, p. 69). Among the A-Kikúyu (W. Scoresby Routledge, *With a Prehistoric People, the Akikuyu of British East Africa*, London, 1910, p. 263) such divination is practised by arranging a number of counters in equal heaps and observing the remaining unit. Among the Baganda small pieces of buffalo- or cow-hide are cast (J. Roscoe, *JAI* xxxii. [1902] 40). Among the Bangala on the Upper Congo River the *ñanga*, or medicine-man, addresses questions to the patient to discover what particular *bwete*, or spirit, is causing the disease. He beats his drum, talks excitedly, and chants various incomprehensible phrases before the patient. 'The lilt of the metre together with the rhythm of the drum make the patient sway to and fro and have a hypnotic effect on him.' His body jerks and twitches, as he is now plied with questions by the *ñanga*. In this way the cause of the illness is found out (J. H. Weeks, *JAI* xl. [1910] 425). In the Sudan the writer received a description of a similar divination by means of music; the rite, which is known as *zar*, is said to be employed even in Cairo, among women. The patient is visited several times by the practitioner, who wears a different coloured dress and sings a different incantation at each visit. Ultimately one dress or incantation is discovered which presumably by its action on the demon causes the patient to swoon. This knowledge having been obtained, the patient is seated astride a live sheep, and the same dress and incantation are employed again. After the patient's second swoon the sheep is killed, the blood is smeared over her, and the meat is partly sacrificed, partly given her to eat.

The use of animals in the cure of disease is a characteristic feature throughout Africa. Thus among the Hottentots, the hand of a sick patient is introduced within the leg of an ox, which is then killed and eaten by married people who have children. A child recently recovered from a severe illness is dragged through an arch over which an ox is made to stand. The ox is killed, and eaten only by married people who have children (Frazer, *op. cit.* iii. 405). Among the Bondei, a white chicken is tied to the head of the bed-post; and later, when it has grown to a fowl, it is taken to a tall tree, killed, and eaten. The medicine-man and patient, on their return, take care not to look behind them (Dale, *JAI* xxv. [1896] 219). In these cases it appears that some good influence is derived by eating an animal which has been brought into contact with a person recently affected by disease.

But, generally speaking, the animal is used only for the transference of the disease to it. Thus, in Bechuanaland, a king after an illness seats himself on an ox stretched on the ground, the head of which is then held in water until it dies of suffocation. To cure a headache, a man will sometimes beat a lamb or goat until it falls down, with the object of transferring to it his pain (Frazer, *op. cit.*

iii. 14). A Guinea negro will tie a live chicken round his neck to cure disease (*ib.*). In such cases the animal or bird is generally driven away or killed. In the Upper Congo, the *mieta* (spirits), 'when they are troubling a family, can be driven into animals by the *ñanga ya bwaka* ['medicine-man of the mat'], and killed by him' (Weeks, *op. cit.* 378). Of all the *ñanga*, this 'medicine-man of the mat' was the most powerful. On his arrival at the sick-house, he put stakes into the ground, and, by tying a mat round them, made an enclosure, in which he sat speaking to the various *mieta*, answering 'himself in assumed voices, pretending he was holding a conversation with them' (*ib.* 383). 'A string was tied from the roof of his clients' house to one of the stakes in his mat enclosure, and the end of the string dropped inside. From this string there dangled dried plantain leaves, twigs, etc.' (*ib.*). When he was tired he shook the leaves—a signal for the lads sitting outside the enclosure to start beating their drums, and for the folk to sing their chorus. Thus he would spend several days in trying to find out which of the *mieta* was troubling the family. Finally, he makes

'a terrific noise inside the mat, as though he were fighting for his life. Shouts, screams, derisive laughter, whacks, thuds, and smacks proceed from the interior of the mat, and at last the *ñanga* rushes out, panting and sweating profusely, holding in his hand a bleeding head [really the head of a rat or lizard, but believed by the people to belong to a mysterious animal dug up from within the mat], and declaring that he has killed the animal that was possessed by the spirit that was troubling the family' (*ib.* 384).

So in Uganda, the evil spirit, which is supposed to dwell at the top of the centre hut-pole, is caught by raising a buffalo's or cow's horn, within which shells are placed so as to make a squeaking noise when the horn is shaken, which is supposed to be the spirit of the horn. When the evil spirit is thus caught, the horn is simply covered with a piece of bark-cloth, placed in a water-pot, and thrown into the river or burnt in the jungle (Roscoe, *JAI* xxxi. [1901] 125 f.).

In addition, of course, to the determination of the particular spirit causing the disease, and to the transference of it to an animal, other therapeutic measures, some of considerable complexity, are prescribed by the medicine-man. Among the Bondei, dieting is common: certain objects of food are tabued. Among the Bageshu (Roscoe, *JAI* xxxix. [1909] 187), 'sometimes herbs are rubbed over the sick man and buried in the path. It is believed that the first person who steps over the herbs will contract the disease. . . .' In the Upper Congo, cupping is often practised, usually by sucking a horn placed over the skin. Massage is a common treatment, often terminated by the pretended extraction of a small object—a palm-nut, stone, or piece of iron—from the patient's body. Enemas and fomentations are also used. Rheumatic pains in the limbs are relieved by tying certain medicines to a brass rod, which is then worn by the patient. Knotted strings are tied round the sufferer's wrists and feet. Among the people of British Central Africa (Stannus, *JAI* xl. [1910] 285), many children's illnesses are treated by boiling certain leaves in water and holding the child over the medicated vapour-bath. Bleeding is arrested by the powdered bark of an astringent tree. Internal remedies are only sparingly used. The treatment of snake-bite is by ligature.

Among the A-Kamba (British East Africa) the medicine-man's gourd commonly contains pebbles, hard seeds, nuts, and such objects as the bone of a lion's paw, a cock's spur, pieces of porcupine quills, etc. He also carries various powders, e.g. a grey powder made from certain trees, and believed to be an antidote to magic and poison; a white powder called *iga* (also used by the A-Kikúyu, and called by

them *ira*); a blackish mixture prepared from some tree, and used to cure swellings of the limbs; a dark medicine contained in a gazelle's horn, which is of value when pointed at the abdomen of a woman in labour; and a medicine which, when mixed with water, is given internally for diarrhoea (C. W. Hobley, *Ethnology of A-Kamba and other East African Tribes*, Cambridge, 1910, p. 100). The A-Kikúyu sew up sword-slashes and spear-stabs. Their *chembu* is made of castor-oil, sheep fat, honey, goat's milk, water of various streams in Kikúyu, urine of a male and female goat and sheep, magumo wool, and the milky sap of wild figs. A little of this mixture placed on the penis cures hæmaturia; it is also good for a cough. Indeed, it will revive a dying man if he be touched with it on the forehead, tongue, navel, buttocks, and toes, and if some be passed five times round his head. Other Kikúyu medicines are made from seeds, leaves, roots, and from the ashes of roots and barks. They are usually kept in the form of a dry powder, and are applied by touching the patient much in the manner described. Expectoration plays an important part in the ritual of treatment, the patient at the same time exclaiming, 'I expel what is bad' (Routledge, *op. cit.* 262; Hobley, *JAI* xl. [1910] 448).

7. Central and S. America.—Among the Indians of America we naturally look for those characteristics in their attitude towards disease which we have met with in Eastern Asia and Malayo-Polynesia (see 'American' section of this article, below). As regards S. America, in South Chili the medicine-man is dressed as a woman, and the great nervous excitement, followed by a state of coma or trance into which he is thrown, forcibly recalls the shamanistic condition existing in Asia and Malaysia. But there is one striking feature in S. America which is on a distinctly lower plane of culture, viz. the persistent attribution of disease to material objects. Thus, among the Araucanos of Chili, the principal god, formerly called Pillan, the thunder-god, was served by malignant spirits called *Huecuvus*, who could transform themselves into any shape and produce invisible wounds by means of invisible weapons. All disease is attributed by them to evil spirits, which produce an invisible wound or introduce some foreign body within the victim. Not only Divine beings, but the living and the dead, may, as malign spirits, assume a form, e.g. snake, ant, or lizard, which may produce disease (R. E. Latham, *JAI* xxxix. [1909] 346). Consequently diseases are treated first by discovering their source, and then by expelling the harmful substance from the body. In Central Brazil the 'good' medicine-man finds the poison which has been sent to the victim by the 'bad' medicine-man, and lays it in water, thus rendering it harmless. The sorcerer may have obtained some hair or blood from the victim, which he then mixes with the poison of wasps, ants, and other insects, prepared with oil and certain resins in a calabash. But, if he cannot obtain blood or hair, he poisons a twig or a woollen thread. He then introduces this into the victim's house, or shoots it with an arrow into a tree near where he lives. The twig is supposed to wound the victim; and so the 'good' medicine-man sucks the wound until the twig (or woollen thread) appears, and then he spits it out. Tobacco-narcosis is a very common mode of treatment, the medicine-man blowing tobacco smoke over the patient's body, kneading it with great force, while the medicine-man's groans and lamentations resound through the village. At length he begins to suck, and ultimately expectorates the cause of the illness (K. von den Steinen, *Unter den Naturvölkern Zentral-Brasiliens*, Berlin, 1897, p. 300).

Similarly, in Paraguay the witch-doctor is supposed to have the power of introducing beetles into a man's stomach. So, when a man is ill, he summons the medicine-man, who, to an accompaniment of rattles and the excited singing of his assistants, spits on and sucks at the patient's stomach until at length he produces a beetle, a palm-nut, or a fish-bone. The witch-doctors usually wear ear-disks faced 'with bright pieces of glass or bits of polished tin' (S. H. C. Hawtrey, *JAI* xxxi. [1901] 291).

LITERATURE.—This is given throughout the article. The only general book known to the writer, Max Bartels' *Die Medizin der Naturvölker* (Leipzig, 1893), cannot be strongly recommended.

C. S. MYERS.

DISEASE AND MEDICINE (American).—

As certain aspects of primitive medicine will be treated in art. MEDICINE-MEN, the present discussion will be limited to the consideration of disease itself from the various points of view of the American aborigines' ideas, customs, ceremonials, etc., connected with its prevention, relief, and cure. Among a race as widely scattered as the American Indians, and occupying, for long periods of time, all kinds of environments—from the Arctic north to the tropical south, from the seashore and coastal regions to the high plateaus and mountainous areas of the continent, island regions like the Caribbean, arid plains like those of the south-western United States and parts of south-western South America, the thick forests and well-watered lands in some other directions, the valleys of the great rivers and the basins of great lakes—the prevalence of diseases, the susceptibility to them, the methods of treatment, and the psychological reaction to the general situation were naturally subject to considerable variation.

1. American Indians a comparatively healthy race.—At the time of the Columbian discovery, the Indians were, on the whole, a healthy people, and, in spite of the effects of intertribal wars and their attendant evils, were holding their own in point of numbers, or, as some authorities believe, were even increasing in population, especially in some parts of the continent. Our knowledge of diseases among the American Indians, before the coming of the whites, is not very satisfactory even for the semi-civilized peoples of Mexico, Central America, and Peru; for many of the uncivilized tribes of both North and South America the data at hand are scanty indeed. Where direct statements of early explorers, missionaries, pioneers, and colonists are lacking, certain inferences can be made from the mention of diseases in myths and legends and cognate folk-lore material. Dr. Hrdlička, our best and most recent authority on the matter, says (*Bull. 30 BE*, pt. i. [1907] p. 540):

'The condition of the skeletal remains, the testimony of early observers, and the present state of some of the tribes in this regard, warrant the conclusion that on the whole the Indian race was a comparatively healthy one. It was probably spared at least some of the epidemics and diseases of the Old World, such as smallpox and rickets, while other scourges, such as tuberculosis, syphilis (pre-Columbian), typhus, cholera, scarlet fever, cancer, etc., were rare, if occurring at all. Taking into consideration the warlike nature of many of the tribes and the evidence presented by their bones (especially the skulls), injuries, etc., particularly those received by offensive weapons, must have been common, although fractures are less frequent than among white people.'

Since contact with the whites, a marked decrease in numbers has taken place nearly everywhere, the causes of this diminution being 'the introduction of diseases (particularly smallpox), the spread of alcoholism, syphilis, and especially tuberculosis . . . and increased mortality due to changes in the habits of the people through the encroachment of civilization.' Certain tribes, however, are now beginning to show a slight increase in population, and Dr. Hrdlička thinks that, 'as more attention is paid to the hygienic conditions of the Indians, an increase comparable with that in whites may be

expected in many sections.' The writer of the present article has pointed out several cases of such increase in his art. 'Indians, North American' in *EBR*¹¹, xiv. 452. Mixed bloods are said to suffer, more than the pure bloods, from 'many disorders and diseases known to the whites,' but the evidence in this matter is by no means convincing.

2. Epidemics, etc.—As has been already noted, epidemics of disease appear to have been rare in pre-Columbian America. According to Dr. H. U. Williams (p. 342), the New World, up to the period of its discovery and occupation by the whites, offered a marked contrast to the Old in the fact that 'the American race, during its sojourn of some thousands of years apart from the rest of mankind, developed a surprisingly small number of infections peculiar to it.' Concerning certain epidemics and wide-spread outbreaks of disease contemporaneous with the settlement of various parts of the continent by Europeans, it is still somewhat doubtful whether the infection in question came from Europe (by way of white people, or, possibly, through Indians who had been taken to Europe) or was of native origin. An interesting example is the epidemic among the Indians of New England in 1616-1620, of which a critical study has recently been made by Dr. Williams. This pestilence, which was accompanied by great mortality among the Indians, from Cape Cod to the Penobscot, and sporadically outside these limits, but from which the English seem to have been mostly immune, may have been a variety of the 'bubonic' plague prevalent in London during the early years of the 17th cent., and transferred to America by sailors, colonists, or returning Indians. It could hardly have been smallpox, as some have thought; this disease raged among the Indians later on (e.g. in 1633). The idea that it may have been carried to the Indians by certain shipwrecked French sailors held captive among them is also to be considered. The European settlers of the period were prone to regard such calamities as visitations of God, just as many Indian tribes looked upon them as the work of evil spirits, etc. The idea also prevailed among the Indians that epidemics of diseases unknown before the advent of the whites were in some way let loose among the natives by the English and other white peoples. Interesting on this point is the following extract from Winslow's *Good News from New England* (1624), cited by Dr. Williams (p. 345):

'Here let me not omit one notable, though wicked, practice of this Tisquantum (Squanto); who to the end he might possess his countrymen with the greater fear of us, and so consequently of himself, told them we had the plague buried in our storehouse; which, at our pleasure, we could send forth to what place or people we would and destroy them therewith, though we stirred not from home. Being, upon the aforementioned brabbles, sent for by the governour to this place, where Hobbamock (an Indian) was and some other of us, the ground being broke in the midst of the house, whereunder certain barrels of powder were buried, though unknown to him, Hobbamock asked him what it meant. To whom he readily answered: That was the place, wherein the plague was buried, whereof he formerly told him and others. After this Hobbamock asked one of our people, whether such a thing were, and whether we had such a command of it. Who answered No; but the God of the English had it in store, and could send it, at his pleasure, to this destruction of His and our enemies. This was, as I take it, about the end of May 1622.'

Ethically, at least, some of the English and some of the Indians were not far removed from one another.

There has been much discussion of the question whether syphilis is of pre-Columbian origin in America, or has been introduced from Europe since the discovery. Dr. A. S. Ashmead (*Amer. Journ. Dermat.*, 1908, pp. 226-233) is convinced of its pre-Columbian origin, and Dr. F. Grana identifies it with the Peruvian *huanti*; Dr. Iwan Bloch (*Intern. Amerik.-Kongr.* xiv. [1904] 57-79), from historical and osteological evidence—he has re-

cently also published a volume on the subject—is another believer in the pre-Columbian theory, which is also shared by E. G. Bourne, the American historian, who considers the legend of the culture-hero Guahagiona and his sores 'conclusive evidence that syphilis had existed in the West Indies long before the coming of the Spaniards' (*Proc. Amer. Antig. Soc.*, N.S., xvii. [1906]). Drs. Tello and Palma of Peru, who have studied the question, seem also to share the opinion that syphilis is pre-Hispanic in Peru, citing in evidence certain representations of the effects of the disease in anthropomorphic pottery, etc.; so also R. D. Wagner and Dr. Capitan, the French anthropologist (*Journ. Soc. des Amér. de Paris*, N.S., vi. [1909]). Dr. Lehmann (*Globus*, xcvi. [1910] 12-13) is of opinion that the evidence in Tello and Palma does not settle the matter satisfactorily, and Dr. Hrdlička is by no means convinced of the prevalence of syphilis in pre-Columbian America. The exact character of the Peruvian *uta*, the Columbian and Paraguayan *buba*, and some other diseases, all of which may possibly on some occasions be mistaken for syphilis, is not yet clearly decided. The idea of syphilis-infection of man from the llama—a belief occurring in certain regions of South America—is not sustained (in man and in the llama the disease is comparatively rare now in Peru). Leprosy, according to Dr. Ashmead, was introduced into America from Spain. There are other interesting S. American diseases that call for further investigation, such, e.g., as the Ecuadorian *huicho*, which seems to have some analogies with the African 'sleeping sickness.'

Among a number of American Indian peoples (e.g. the Oregonian Klamath) there are general dances and like ceremonies carried out for the purpose of avoiding or driving away epidemics and outbreaks of disease. Some of the Indians of the south-western United States tried to 'capture' the spirit of smallpox during an epidemic of that disease, and similar procedures are reported from elsewhere.

3. Conceptions of the nature, source, etc., of disease.—Under this head could be cited illustrations of all manner of ideas, from the most natural and simple to the most far-fetched and complicated, or even metaphysical. On this point Dr. Hrdlička remarks (*Bull. 30 BE*, pt. i. [1907] p. 837):

'The causation and the nature of disease being to the Indian in large part mysteries, he assigned them to supernatural agencies. In general, every illness that could not plainly be connected with a visible influence was regarded as the effect of an introduction into the body, by malevolent or offended supernatural beings or through sorcery practised by an enemy, of noxious objects capable of producing and continuing pain or other symptoms, or of absorbing the patient's vitality. These beliefs, and the more rational ones concerning many minor indispositions and injuries, led to the development of separate forms of treatment, and varieties of healers.'

Among the American aborigines one finds examples of the attribution of disease and illness in man to his own misdeeds and sinfulness, to his neglect of his ancestors, to violations of innumerable kinds of tabus and prohibitions, to the malevolence or ill-will of the dead, to the touch of ghosts, to the actions of the wind and the moon, to the machination of enemies through magic and witchcraft, etc., to the desire for revenge of the animal world ill-treated by man, to temporary loss of the soul, to the introduction of foreign objects into the body, to the shadows of certain other people (e.g. mourning widows and widowers), to women (particularly when menstruating), etc. For certain special diseases and pathological conditions very curious reasons are sometimes given. Some of the names of diseases and terms relating to or describing their symptoms are interesting psychologically. In Tsimshian the

term for 'having epileptic fits' really signifies 'like a bear'; and the word for 'crazy' means 'like a land-otter.' The Chinook term for 'rheumatism' means lit. 'tired all over'—quite an expressive name. In Kutenai the general term for 'sick' is *sānitlqōinē*, lit. 'had-bodied he is'; the corresponding word for 'well' being *sikittlqōinē*, 'good-bodied he is.' The term 'sick' is applied in a number of Indian languages to denote emotions and the like. Thus in the speech of the Mosquito Indians the term for 'angry' signifies lit. 'liver-sick'; in Haida, 'downcast' is 'heart-sick,' etc. By the Mosquito Indians the liver is regarded as the seat of emotional life; among the Kutenai and many other Indian tribes it is the heart. With some of them, unless the heart can be touched or struck, the efforts of the shaman to injure or kill a man turn out useless. Certain tribes believe that diseases are 'shot' into the body (e.g. 'pains' with some Californian tribes).

4. Ceremonials, magic and religious, in relation to disease and its cure.—The employment of magic rites and formulae, of religious or semi-religious ceremonials, ritual and other performances, for the purpose of preventing or curing diseases of various sorts is common in all regions of the globe, especially among uncivilized peoples, and the aborigines of America are no exception to the rule. These rites and ceremonies vary, from the simple procedures of the 'medicine-men' and 'medicine-women,' shamans, or sorcerers, who by rude incantations and noise-making with rattles, drums, etc., sought to drive away disease, or by laying on of hands, sucking, tricks of legerdemain, and the like, pretended to extract noxious objects from the body of the patient, to the more elaborate and highly developed ritual activities of 'medicine-societies' carried out sometimes for the benefit of an individual, or a whole family, and again on behalf of the entire community. The whole wide range is occasionally to be found within the limits of a single linguistic stock. Thus we have the crude rites of the lowest Athapaskan tribes of Alaska and north-western Canada, on the one hand, and, on the other, the complicated system of the 'night chant' of the Navaho, who are of the same lineage; in like manner, also, the simple procedures of the shamans of the barbarous Utes and Shoshones, the lowest representatives of the Uto-Aztecan stock, contrasting with the rites and ceremonies of the Aztecs of ancient Mexico and their semi-civilized kindred, who mark the highest limit attained by this people. And S. America, while not exhibiting, perhaps, such extremes of diversity within one and the same stock, shows equal variety, if one compares the barbarous and completely uncivilized tribes of the Brazilian, Peruvian, and Venezuelan forests with the ancient Peruvians. Healing ceremonies of great interest occur among many American Indian peoples; the best known and those described in greatest detail belong to some of the Plains tribes and peoples of the Algonquian stock. As Dr. Hrdlička remarks (*Bull. 30 BE*, pt. i. p. 838):

'Among most of the populous tribes the medicine-men of this class (the priest-healer type) were associated in guilds or societies, and on special occasions performed great healing or "life-(vitality)-giving" ceremonies, which abounded in songs, prayers, ritual, and drama, and extended over a period of a few hours to nine days.'

There also existed among some tribes

'large medicine-societies, composed principally of patients cured of serious ailments. This was particularly the case among the Pueblos. At Zuñi there still exist several such societies, whose members include the greater part of the tribe and whose organization and functions are complex. The ordinary members are not actual healers, but are believed to be more competent to assist in the particular line of diseases which are the specialty of their society, and therefore may be called by the actual medicine-men for assistance. They participate also in the ceremonies of their own society' (p. 838 f.).

The curative ceremonies of such people as the Navaho, when employed for the benefit of individuals, are both prolonged and costly, being exceedingly elaborate both in ritual and in paraphernalia. According to Dr. G. A. Dorsey (*ib.* p. 229):

'Among the non-Pueblo tribes of the S.W., especially among the Navaho and Apache, the extended ceremonies are almost entirely the property of the medicine-men, and must be regarded as medicine-dances. Many of these are of an elaborate and complicated nature, but all are designed for the restoration of the sick. In these ceremonies masks are often worn, and complicated and elaborate dry-pictures are made, both these features probably having been borrowed from the Pueblo tribes.'

Some of these great 'medicine' ceremonies have gathered about them practically all the ritual lore and legend of the tribe, and serve as a general outlet for the observance and dramatic sense of all the people. The great *Midē'wīwin*, or 'grand medicine society,' of the Algonquian Ojibwa and related tribes is described in detail by Hoffman (7 *RBEW* [1891] 143-300); the medicine-men of the Athapaskan Apache by J. G. Bourke (9 *RBEW* [1892] 443-603); the esoteric fraternities of the Zuñi by Mrs. Stevenson (23 *RBEW* [1904]); the Cherokee medicine-men and their sacred formulae by Mooney (7 *RBEW* 301-397); the secret societies of the Kwakiutl by Boas (*Rep. U.S. Nat. Mus.*, 1895); the organizations of the Algonquian Cheyenne by Dorsey (*Anthr. Publ. Field Columb. Mus.* ix. [1905]); the 'mountain chant' of the Navaho (5 *RBEW* 379-467), and the great 'night chant' of the same people, by Matthews (*Mem. Amer. Mus. Nat. Hist.*, N.Y., vol. vi. [1902]). For other N. Amer. Indian tribes much valuable information will be found in the various monographs of Boas (Eskimo and peoples of North Pacific coast), Dixon and Kroeber (Californian tribes), Kroeber, Wissler, Lowie (tribes of the Great Plains), etc. For general information concerning the American Indian shaman, the article of Dr. R. B. Dixon (*JAFI* xxi. [1908] 1-12) is of importance. From some points of view, the ceremonials of the Navaho are the most remarkable of American healing-rituals. For S. America, we have not much accurate and detailed material of a reliable character concerning the rites and ceremonies of the secret societies having to do with 'medicine.' The best is to be found in the recent works of Koch, Nordenskiöld, Ehrenreich, Hawtrey, Guevara, Latham, etc. Some data are also contained in the writings of certain of the early missionaries, explorers, and historians, such as Charlevoix and others. Concerning the great 'night chant' of the Navaho, a ceremony lasting nine days, Dr. Matthews says (*Amer. Anthropol.* ix. [1896] 50):

'The principal purpose of this great ceremony is to heal the ailing man or woman, who defrays all the expenses of the ceremony; but the occasion is used, also, to implore the gods for various temporal blessings, not only for the sick man, but for all who participate in the work, with their friends and relations. This ceremony, like nearly all ceremonies, ancient and modern, is connected with a myth or legend (several myths, indeed, in this case), and many of the acts in the ceremony are illustrative of the mythic events.'

He also observes further:

'In them we find a nocturnal vigil analogous to that of the mediæval knight over his armour; we find a vigil in which men and gods, or the properties that represent the gods, alike take part; we find evidence of the belief in a community of feeling and interest between gods and men, and we have an instance of a primal feast in common or love-feast closely resembling certain ceremonial acts performed among ourselves to-day.'

5. Games and gaming implements as preventives and as remedies for disease.—That games among savage and barbarous peoples have certain preventive and curative rôles with regard to disease as well as other afflictions and calamities of mankind is not at all surprising, especially if one takes the view of their magic and religious origin expressed by Stewart Culin in his monograph on 'Games of the North American Indians' (24 *RBEW* [1907]). Among the Sacs and Foxes (Culin, p. 448 f.) the

game of ring and pole was played about the house, because 'people believe there is a spirit of sickness, Apenaweni, always hovering about to get into the lodges, and this game is encouraged in order to keep it away.' The employment among the Kwakiutl Indians of Vancouver Island of a sort of 'bean-shooter' (Dr. Newcombe calls it 'the figure 4 dart-shooter') in a medical ceremony is thus described (Culin, p. 761, quoting Newcombe):

'Among the Kwakiutl of the Nimpkish tribe, this is called *Hendlem*. In use a small stick is placed across the top of the plant side-pieces, and is shot to some little distance by pressing on the trigger-piece, which is horizontal to the figure 4. The figure is held in front of the body with both hands, with the short end of the trigger downwards, and the perpendicular stem of the 4 horizontally. It is frequently used when children are sick, and small sticks are shot in different directions to chase away the spirit supposed to be causing the sickness. It was used as lately as two years ago at Alert Bay. Sets of four of this instrument are employed by grown-up people—relatives of the sick. The sticks are left lying about after the performance, but the guns are burned when done with. This goes on for four nights in succession. The noise of the two flexible sides coming together when the stick is ejected is supposed to aid the good work. At night the four shooters are left loaded near the sick child, to scare the ghost or spirit. They are also used as a game by children.'

This is an interesting example of the employment of the same implement or instrument in a children's game and in a 'medical' procedure. Rings or hoops, similar to those used in the hoop and pole game, are used in certain 'medicine' ceremonials by the shamans of the Oglala Dakota Indians (Culin, p. 435) for the purpose of aiding in the cure of the sick. On the first day of the healing rite of the Navaho, known as *Yebitchai*, similar gaming rings are made. These rings were used to touch the mouth and other parts of the patient's body, and were afterwards rolled out of the lodge. Of the 12 rings used in this ceremonial, as described by Col. J. Stevenson (3 *RBEW* [1891] 239), 'three were afterwards taken to the east, three to the south, three to the west, and three to the north, and deposited at the base of piñon trees.' We are further informed: 'The rings were placed over the invalid's mouth to give him strength, cause him to talk with one tongue, and to have a good mind and heart. The other portions of the body were touched with them for physical benefit.' Culin (p. 437) reports having seen 'actual practical gaming rings' used in ceremonies. Naturally, where the beginnings of the priest and the doctor are found together in the primitive shaman, the implements and objects in ceremonial use must often be the same or very similar. And the lines between 'games' and other more or less ceremonial performances are not always very marked; indeed, the former are not infrequently made a part of religious or quasi-religious observances—and this is not at all peculiar to the aborigines of the New World.

6. Medical operations, surgery, etc.—Some of the performances of the American 'medicine-men' belong rather to the field of jugglery and legerdemain than to that of operative therapeutics. Others have, doubtless, more of a religious or mystical than of a medical significance. There are, however, a number that may justifiably be classed as relating to the beginnings of medical operations and surgery as we understand them. The range of these among even quite primitive tribes may be seen from Father Morice's article (see Lit.) on the surgery of the Dénés, an Athapaskan people of British Columbia, where items relating to bleeding, burning, blistering, treatment of broken limbs, deformities, uterine troubles, child-birth, cataract, etc., are briefly considered, some new and interesting facts being reported. Some of the procedures in vogue are as follows:

Blood-sucking is in use both as a general practice and as a special procedure for wounds, cuts, bites, and stings of animals and insects, particularly those of a poisonous nature, including

wounds due to arrows and other weapons that have been tipped with deadly substances, snake-bites, abscesses, etc.

Blood-letting by means of flint-knives, arrow-heads, etc., was practised by the ancient Peruvians and Mexicans, and is also reported from a number of uncivilized tribes, such as the Central Californian Indians, the Kwikpamiut of the Yukon (Alaska), certain tribes of the Isthmian region of Central America, the Brazilian Carayá, etc. The place of venesection differs according to the trouble, and varies with divers peoples. Bartels (p. 269) notes that for headache the Carayá incise the veins of the forehead; the ancient Peruvians cut into the veins of the root of the nose, the Indians of Houduras the veins of the leg or the shoulder; for troubles in the upper part of the body, certain Californian tribes practised venesection on the right arm, and on the left arm when the limbs were affected. Certain Indians of the Isthmian region are said to have practised venesection by shooting small arrows from a special bow into various parts of the patient's body until a vein was opened.

Scarification and kindred procedures are wide-spread over primitive America, ancient and modern, the implements used being knives, sharp pieces of stone, bits of shell, pieces of flint or obsidian, thorns, fish-spines, teeth of animals; some tribes have developed special implements for the purpose, as, e.g., the Carayá of Brazil.

Cauterization with cedar-bark is practised by several tribes of the North Pacific coast (e.g. Bilqula, Twana) for rheumatism and other diseases of a like order; by some Southern-Californian tribes with a hot coal for syphilis; by some Central American peoples with hot ashes and heated leaves for wounds, etc.; by the Choctaws and certain Nicaraguan tribes. Many North American Indian peoples practise cauterization for obstinate sores, etc.

Bone-setting is accomplished quite cleverly by a number of tribes all over the continent, particularly the Siouan Winnebagoes, the Creeks of the south-eastern United States, some of the peoples of the North Pacific coast, and certain of the Brazilian tribes; splints and bandaging are employed especially by the Bilqula, Creeks, Winnebagoes, and others.

Amputation does not seem to have been generally practised among the American Indians, even such peoples as the Creeks and Winnebagoes, who were skilful in bone-setting, seldom or never resorting to it.

Trephining was in use in ancient Peru, as indicated by the crania from various pre-Columbian burial-places, and a special study of these has been made by Muniz and McGee (16 *RBEW* [1897] 3-72). Dr. Hrdlička (*Bull. 30 EE*, pt. i. p. 338) says: 'The highest surgical achievement, undoubtedly practised in part at least as a curative method, was trephining. This operation was of common occurrence, and is still practised in Peru, where it reached its highest development among American tribes. Trephining was also known in quite recent times among the Tarahumare of Chihuahua, but has never been found north of Mexico.'

For the purpose of *stopping bleeding* of a dangerous sort, many American tribes used down of various birds (Haida), mineral and plant substances (Dakotas, Winnebagoes), hot ashes (for nose-bleeding); and the Brazilian Carayá (Bartels, p. 286) are credited with the use of bindings for the limbs. With the whites the use of gunpowder for stopping blood has come into practice with many tribes all over the continent. According to Hrdlička (*loc. cit.*, p. 337), 'antiseptics are unknown, but some of the cleansing agents or healing powders employed probably serve as such, though undesignedly on the part of the Indians.'

7. *Materia medica, etc.*—In both the procedures of individual shamans and the more elaborate and extensive ceremonies, such as those carried out by the Navaho, etc., a large number of 'fetishes,' charms, amulets, and the like are employed, and the principles of *similia similibus* and sympathetic magic are appealed to in innumerable ways, sometimes with exceeding skill and cunningness. Dr. Hrdlička (*l.c.*, p. 336) says:

'The fetishes used are peculiarly shaped stones or wooden objects, lightning-riven wood, feathers, claws, hair, figurines of mythic animals, representations of the sun, of lightning, etc., and are supposed to embody a mysterious power capable of preventing disease or of counteracting its effects.'

Of real *materia medica*, animal and mineral substances are comparatively rarely employed. Dr. Hrdlička (p. 337) says:

'Animal and mineral substances are also occasionally used as remedies. Among South-western tribes the bite of a snake is often treated by applying to the wound a portion of the ventral surface of the body of the same snake. The Papago use crickets as medicine; the Tarahumare, lizards; the Apache, spiders' eggs. Among the Navaho and others red ochre combined with fat is used externally to prevent sunburn. The red, barren clay from beneath a camp-fire is used by White Mountain Apache women to induce sterility; the Hopi blow charcoal, ashes, or other products of fire, on an inflamed surface to counteract the supposed fire which causes the ailment.'

The oil, grease, etc., of certain animals are used for external and internal application, often as antidotes—thus, among certain tribes of Central Mexico, scorpion-oil for scorpion-bites; among

the Caribs, snake-oil for snake-bites. Among the Yamamadi and neighbouring tribes of Brazil (Bartels, p. 120) we meet with the curious custom of plastering the affected portion of the patient's body all over with feathers. Some of the Southern-Californian Indians used pills of wild dove's dung as a remedy for gonorrhœa. Pounded charred bones are in use by the Kutenai for sore eyes. The great mass of primitive remedies, however, come from the plant-world—roots (most commonly), twigs, leaves, bark, flowers and seeds (rarely)—and are most frequently employed in the form of a decoction, made from either the fresh or the dry plant (sometimes from its powder). The 'doctrine of signatures' and similar ideas controlled a good deal of the botanical medicine of the aborigines of America, which reached its height with such peoples as the ancient Mexicans, as may be seen from Father Gerste's monograph on the subject, where the data in the old historians, are carefully brought together. In the warmer and tropical regions of America numerous vegetable gums and balsams, the use of many of which has passed over now to the white population as well, were employed for medical purposes, for stopping bleeding, curing and cleansing wounds, etc. The number of plant-remedies in use even among the uncivilized tribes is often quite large. Among the Californian Karok, 13 species of medicinal plants were reported; among the Twana and neighbouring tribes of the State of Washington, 18; among the Ojibwa (according to Hoffman), 56; the list of Schoolcraft, representing several N. American tribes, contains 89; of the plants known to the Moqui or Hopi, according to Hough (*Amer. Anthropol.*, 1898), 45 are employed for medical purposes—there being probably not over 160 indigenous species in the environment. As Bartels (p. 209) notes, the Indians possess quite a large number of plant-remedies for diseases and troubles of the eyes. Abundant emetics and astringents are also provided. Plant-remedies are in vogue for the treatment of cuts, burns, bruises, wounds, bites, stings, and stomach-ache and kindred ills, diseases of the respiratory tract, and nasal troubles, in the form of poultices and plasters (often of hot leaves), decoctions, lotions, and inhalations. With the Cherokee Indians the plants furnished all the remedies as against the animal world, which inflicted diseases upon mankind. The formulæ of the medicine-men of this interesting Iroquoian people have been recorded by Mooney, and they form a body of data of great importance for the study of primitive medicine in its incantational and invocational aspects. With the sowing and gathering of medical plants there are sometimes connected certain rites and ceremonies, as, e.g., is the case with the 'medicine tobacco' of the Crow Indians of the Siouan stock. Interesting also is the sacred *tule* pollen in use among the Apache, known as *hodentin*, and 'given or applied because of its supposed supernatural beneficial effect.' Many plants 'are employed as remedies simply for traditional reasons, without any formulated opinion as to their modes of action' (Hrdlička, p. 837).

8. Drugs, narcotics, etc.—In connexion with puberty-rites, 'man-making' ceremonies, and performances of a kindred nature, certain narcotic and stupefying substances were employed among tribes representing all stages of culture all over the continent. In the *huskanaw*-ceremonies carried out on boys at the age of puberty among the Virginian Indians, the subjects were stupefied by a decoction of *Datura* ('jimson weed'). A variety of *Datura* was used by the shamans of the Californian Yokuts to induce religious frenzy. This was done also, in all probability, by those of the Indian tribes of the south-western United States (Navaho, Hopi, etc.)

who are acquainted with the properties of the *Datura*. Various tribes of the Gulf States employed in their ceremonial purifications the 'medicine' known as the 'black drink,' a decoction made from the leaves of the *Ilex cassine*. This 'medicine' figures in the great *Busk*, or annual green-corn thanksgiving ceremony of the Creeks. According to Hall (*Rep. U.S. Nat. Mus.*, 1885), the Creeks were in the habit of preparing and drinking it before council-meetings, because they believed that 'it invigorated the mind and body and prepared for thought and debate.' In various regions of North, Central, and South America several kinds of tobacco furnished medicine for divers diseases. Pipe-smoking for asthmatic troubles is reported from the Dakotas, Winnebagoes, Creeks, and other tribes; in several parts of Mexico, tobacco was used for similar purposes, and likewise against rheumatism. Among the Ipurina Indians of Brazil, incurable sick people are completely narcotized by tobacco and thrown into the river. In South America, tobacco was chiefly used in the form of snuff, and, according to McGuire (*Bull. 30 BE*, pt. ii. [1910] p. 768), 'there is some evidence that the plant was chewed in Central America.' McGuire (p. 768) says:

'Tobacco was cultivated in most tribes by the men alone, and was usually smoked by them only; among the Iroquois and some of the Pueblos trade tobacco was not smoked in solemn ceremonies. At times both priests and laymen smoked plants or compounds that were strongly narcotic, those using them becoming ecstatic and seeing visions. To the Indian the tobacco-plant had a sacred character; it was almost invariably used on solemn occasions, accompanied by suitable invocations to their deities. It was ceremonially used to aid in disease or distress, to ward off danger, to bring good fortune, to generally assist one in need, and to allay fear.'

The general use of tobacco all over America was much furthered when many of the European colonists devoted themselves to the planting and sale of this plant. Its fame as a medicine was really the first basis of its popularity when introduced into the Old World. Among some Indian tribes the planting, cultivating, and harvesting of tobacco had many religious or semi-religious rites and ceremonies attached to them. According to Simms (*Amer. Anthropol.*, N.S., vi. [1904]), as cited by McGuire (p. 768),

'the planting of medicine tobacco is one of the oldest ceremonies of the Crows, consisting, among other observances, of a solemn march, a foot race among the young men, the planting of seed, the building of a hedge of green branches around the seed-bed, a visit to the sweat-house, followed by a bath and a solemn smoke, all ending with a feast; when ripe, the plant was stored away, and seeds were put in a deerskin pouch and kept for another planting.'

In S. America a number of plant-juices were employed for the purpose of making more or less intoxicating or stupefying drinks, used on ceremonial occasions, etc.; and 'getting drunk' was not infrequently a common and regular occurrence, on festival occasions, with certain Brazilian and Paraguayan tribes. In N. America, according to Dr. Hrdlička (p. 837), 'among the tribes who prepare *tiswin*, or *tesvino*, particularly the Apache, parts of a number of bitter, aromatic, and even poisonous plants, especially a species of *Datura*, are added to the liquid to make it "stronger"; these are termed medicines.' Certain Californian tribes made drinks from *manzanita* berries, and the Pima and other tribes of the Arizonian region manufactured an intoxicating liquor from the fruit of the cactus. Among many tribes of ancient and modern Mexico, a decoction of *peyotl* (*Anhalonium lewinii*), a small variety of cactus, had, and still has, a very extensive use; so also in the region of the United States north of Mexico. According to Mooney (*Bull. 30 BE*, pt. ii. p. 237), it was 'formerly and [is] still much used for ceremonial and medicinal purposes by all the tribes between the Rocky Mountains and the Gulf of Mexico, from Arkansas river southward, almost to

the city of Mexico.' The Nahuatl *peyotl* corresponds to the Kiowa *señi*, Comanche *wokowi*, Tarahumare *hikuli*, etc. Under the incorrect title of *mescal* it is well known to the whites, and has been even used for psychological and medical experimentation.

The 'eating of mescal buttons' takes place during ceremonies of considerable length among the Kiowa (where they have been studied by Mooney), Comanche, and other tribes. With these peoples, 'it is rather a ceremony of prayer and quiet contemplation. It is usually performed as an invocation for the recovery of some sick person; it is held in a *tipi* specially erected for the purpose, and begins usually at night, continuing until the sun is well up in the morning.' Women, as a rule, do not take part in the ceremony proper, but 'occupy themselves with the preparation of the sacred food and of the feast in which all join at the close of the performance.' 'At some point during the ceremony the sick person is usually brought in to be prayed for, and is allowed to eat one or more specially consecrated *peyotls*.' Mooney says further: 'The number of "buttons" eaten by one individual during the night varies from 10 to 40, and even more, the drug producing a sort of spiritual exaltation differing entirely from that produced by any other known drug, and apparently without any reaction. The effect is heightened by the weird lullaby of the songs, the constant sound of the drum and rattle, and the fitful glare of the fire.' The Tarahumare and some other Mexican tribes have a *peyotl* dance. The effects of 'mescal buttons' have been studied experimentally by Havelock Ellis (*Pop. Sci. Mo. lxi*, [1902] 57-71), and, as Mooney notes (p. 237), 'tests thus far made indicate that it possesses varied and valuable medical properties, tending to confirm the idea of the Indians who regard it almost as a panacea.' Father Gerste (pp. 68-69) records its use, not only as a sort of panacea for fatigue, etc., but also as a means of obtaining hallucinations, which were then taken for messages from the gods, and prophecies of the future. The Chichimecs, according to Sahagun, consumed large quantities of *peyotl*, and they believed that 'it gave them courage, took away all fear during battle, rendered them insensible to hunger, thirst, etc., and preserved them from all dangers.'

The 'mescal button' or 'mescal' here described is not to be confounded with the mescal (food and intoxicating drink, the latter post-Columbian) produced in this region from the agave.

9. Inventions for use in 'medicine.'—Besides the vast number of amulets, charms, and talismans, of which some account is given in art. CHARMS AND AMULETS (Amer.), a few 'inventions' of a medical or quasi-medical order, in use among American Indian peoples, deserve mention here. Such are, *e.g.*, a sort of respirator of fine woven grass used by the Kwikpagmiut Eskimo of Alaska (Bartels, p. 222) to prevent the smoke from getting into the lungs of the people in the 'sweat-house'; the scarification-implements of fish-teeth made by the Carayás of Brazil (p. 267), which are of peculiar interest; the bone and horn tubes used by several North American tribes (Navaho, Ojibwa, Creek, Siouan peoples) for scarification, blood-sucking, and similar procedures. Note may be taken here also of the litters for the sick and wounded among a number of tribes (*e.g.* Dakotas); and the snow-spectacles of the Eskimo.

10. Hygiene, sanitation, etc.—The idea that 'cleanliness is next to godliness' was wide-spread among many American Indian peoples, as their frequent bathing, and other cleansing procedures, the very common use of the 'sweat-house' (accompanied often by elaborate ceremonials), the washing of the sexual parts, and the attention to the body during menstruation, after *coitus*, etc., abundantly indicate. Some of the tribes lowest in intelligence, apparently, are very careful to bathe frequently and thoroughly—the process beginning with the new-born infant, which, even in the cold north, is immediately plunged into the water; the mother also cleansing herself as soon as possible. This treatment of child and mother is discussed at some length in the works of Ploss and others who have written in particular of menstruation and of child-birth among primitive peoples. Fasting, bathing, and sprinkling ceremonials are found accompanying the great religious performances as well as the smaller, and they are also to be met with in connexion with preparation for and participation in games, which have often a more or less religious character. Of the Tsimshian Indians of British

Columbia, who are sun-worshippers, Boas says (*5th Rep. on N.W. Tribes of Canada*, 1889, p. 50):

'Men make themselves agreeable to the deity by cleanliness. Therefore they must bathe and wash their whole bodies before praying. For the same reason they take a vomitive when they wish to please the deity well. They fast and abstain from touching their wives, if they desire their prayers to be successful.'

It is evident that many tabus, among the American Indians, no less than among primitive peoples in other parts of the globe, are of this hygienic, or quasi-hygienic nature. Sometimes, as among the Tsimshian (Boas, p. 50), when a special object is to be attained, 'to make the ceremony very successful, their wives must join them; if the wife should not be true to the husband, the effect of the fasting is destroyed.' Bathing and cleansing appear also frequently, and sometimes elaborately, in connexion with mourning rites and ceremonies connected with the handling and disposal of the dead. The use of water reaches its maximum, perhaps, with the ancient Mexicans, who 'washed the soul.' The 'purification' of the soul as a means of curing the body of disease was in vogue among a number of the peoples of ancient Mexico, as Father Gerste notes (p. 18). Water was regarded as a remedy *par excellence*, because 'it cured the body by washing the stains of the soul.'

The use of the bath (with some tribes daily) as a hygienic or medical procedure, often complicated with religious or mystical ceremonies, was wide-spread in all parts of primitive America, the water used having added to it sometimes (*e.g.* among the Dakotas) certain decoctions of plants—occasionally for the purpose of irritating the skin. Some Indian tribes, like the Hopi or Moqui, and the Pueblos, avoided cold baths altogether; others, like the Pimas and some tribes of Lower California, preferred them. With quite a number of tribes (Dakotas, Creeks, Ojibwa, Klamath), especially in the Rocky Mountain region, hot baths were followed immediately by cold, the individual rushing at once from the 'sweat-house' and plunging into the nearest stream. Cold baths for fever were in vogue among many tribes, and the Huastecs of Mexico even submitted smallpox patients to this procedure, thereby greatly increasing the mortality from that disease. The Moqui, when suffering from fever (Bartels, p. 134), 'used to lie down in the cold water until they got well or died'—a sort of 'perpetual bath,' as the author remarks. Similar practices are reported from the Winnebagos. Aspersions with cold water is resorted to by several tribes. Among the tribes of the Columbia region and the North Pacific coast, many are very fond of hot baths, and the institution of the 'sweat-house' or primitive 'steam-bath' is wide-spread all over the continent, from the uncivilized tribes of the Plains and the Rocky Mountain regions to the more or less civilized Aztecs of ancient Mexico, with their *temezcalli*, etc. The Mayan peoples, likewise, had their *tuh*. In Mexico, Central America, and the Pueblo region, the 'sweat-houses' were more imposing constructions, but over a large part of the continent they were simply made of willows or the like, large enough to contain a single individual, the steam being produced by pouring water over heated stones. The structure usually had a temporary covering of skins and blankets. The body was sometimes scraped before leaving the sweat-house, and some of the Eskimo are said to 'rub themselves after the bath with grass and twigs.' According to Henshaw (*Bull. 30 BE*, pt. ii. p. 661) sweating was practised among the American aborigines for three different purposes: (1) as a purely religious rite or ceremony for the purpose of purifying the body and propitiating spirits; (2) as a medical

practice for the cure of disease; (3) often as purely social and hygienic—'a number of individuals entered the sweat-house together, apparently actuated only by social instinct and appreciation of the luxury of a steam bath' (p. 662). As a religious ceremony it was used by warriors before going forth, by hunters previous to departing for the chase, by boys and girls at puberty, and by all sorts of people in time of danger, or before undertaking special exploits, etc. Moreover, 'among the Plains tribes all priests who perform ceremonies have usually to pass through the sweat-house to be purified, and the sweating is accompanied by special rituals' (p. 661). The ceremonials of the sweat-house with some tribes are elaborate and complicated, especially where there is a village or a general *temezcalli* or *estufa*. Nelson informs us that, among the Alaskan Eskimo, the *kashim* used for the sweat-bath was 'the centre of social and religious life in every village.' With most tribes also the construction of the sweat-house 'was attended with many rules and observances.'

Massage was practised in various ways by numerous American peoples (rubbing, pressure with hands or feet, etc.). Purifications of various sorts, including fasting, bathing, taking various 'medicines,' were in vogue among many tribes, previous to participation in games and other more or less ceremonial performances. Culin (*op. cit.*) refers to such 'medicines' in connexion with the foot-races of the Tarahumare, the ball-games of Zúñi, Cherokee, Ojibwa, Choctaws, Mohawks, etc. Care regarding the satisfaction of natural necessities is reported from a number of American Indian peoples. According to Joest (*Int. Arch. f. Ethn.* vol. v. Suppl., 1893), the Caribs and Arawaks, who live near rivers, etc., go thither for such purposes. Otherwise, they go to some distance from the village, scratch a hole in the sand, and carefully cover up their excrement, cleansing themselves with sand. Concerning the Carayá Indians of Brazil, Ehrenreich (Bartels, p. 261) remarks on

'the feeling of decency of these savages exhibited in their manner of defecating, which is of culture-historical interest. It is done as far away as possible from the village. A hole is made in the sand. The individual sits over it with outspread legs, hiding the upper part of his body behind a mat. The excrements are always carefully buried.'

Certain North American Indians also are very careful in the matter of relieving themselves, always doing so out of the public way, and not in view of any one.

Some of the food-tabus of American Indian peoples have at least a *prima facie* hygienic value. Careful regard for the purity of water is evident both in the Pueblo region of the south-western United States and from the early accounts of the semi-civilized peoples of ancient Mexico.

Ehrenreich reports the Carayá Indians of Brazil (cited by Bartels, p. 238) as inquiring of every stranger, 'Have you catarrh?' and permitting him to enter their cabin only after assuring themselves that there is no danger from tuberculosis—a disease upon the increase among them, and of whose infectious character they are fully aware. But this is post-European. Among the Indians of northern Mexico individuals suffering from contagious or infectious diseases are abandoned by their fellows, who, however, place water and wild fruits within easy reach before leaving (Bartels, p. 242). The ancient Aztecs, according to Gerste (p. 18), had the same fashion of treating severe cases of disease, where death might be expected. The family of the patient carried him to the highest point of some near-by mountain, placed beside him food and a vessel of water, and left him to himself, for death or cure, as the case might be, after forbidding all persons to go near him. The

segregation of the patient in order to keep away evil spirits, etc., was in vogue among many tribes. Some, like the Winnebago Indians of Wisconsin and the Mosquitos of Honduras, went so far as to surround the bed of the sick with poles on which were hung various animals, or to hedge him in with painted sticks, allowing no one but the 'medicine-man' to approach the spot (Bartels, p. 244). Hygienic motives may also enter here in part, as also in the case of the abandonment of persons suffering from contagious or infectious diseases. Here perhaps ought also to be mentioned the fact reported by Dr. Farabee of the very primitive Macheyengas of eastern Peru, that they 'are more afraid of the disease from which he died than of the dead man.'

11. Personification and forms of disease.—The disease or sickness is often given some special form and recognized as having the shape of some object or creature, whose expulsion by the shaman or other qualified person, with or without the accompaniment of primitive music, incantations, conjurer's tricks, and similar devices (the evil object is frequently 'sucked out' by the medicine-man), is followed by relief or cure, temporary or permanent. Such procedures are known all over America, from Alaska to Patagonia, and from Greenland to Brazil. The representation of the disease as a piece of bone is wide-spread; common also is the conception of it as a piece of stone or some similar object. The claws of such animals as the bear, the spines of the porcupine, etc., likewise figure in the same way. Living creatures, corporeally or spiritually, constitute the disease-cause with many American tribes, having in some way or other, of themselves, or through the machinations of shamans or other evil-disposed individuals, been introduced into the body of the patient. The Sioux Indians, like some of the tribes of Central Mexico, personify disease as a worm; the Klamath and certain of the Sioux as some sort of insect; some Indians of Central Mexico as a large ant; the Klamath, Karok, and other Californian tribes of the north as a frog; and the Dakotas as a tortoise. Another common personification is a snake. The Twana, Chimakum, and Klallam Indians of the State of Washington believe that certain diseases are caused by a wood-pecker pecking at the heart of the person affected. Even quite large animals are believed by some Indian tribes to make their way into the human body and cause disease and sometimes death. Such are the bear and deer among the Dakotas; the squirrel among the Twana and neighbouring tribes; the porcupine among the Sioux; the otter among certain tribes of the North Pacific coast region (some birds figure here also, of considerable size). Among the Twana, Chimakum, and Klallam it is believed that evil-minded shamans or sorcerers can send into the body of a man a bear, which eats at his heart and so causes him to become sick (Eells, *Ann. Rep. Smiths. Inst.*, 1887, pt. i.). Among the Nutka Indians of Vancouver Island, according to Boas (*6th Rep. N.W. Tribes*, 1890, p. 44),

'the cause of sickness is either what is called *māyatlē*, i.e. sickness flying about in the shape of an insect and entering the body without some enemy being the cause of it; or the sick person has been struck by sickness thrown by a hostile shaman, which is called *menū'geitl*. Their ordinary method of removing disease is by sucking and singing over the patient.'

12. Prognostics, etc.—Devices for the prognostication and prophesying of the issues of diseases of various sorts are reported from many American tribes. Among the Kutenai Indians of south-eastern British Columbia, according to Boas (*5th Rep.* p. 46), 'if the hands of a dead man (before the body is buried) are closed so firmly that they cannot be opened, it indicates that the

tribe will be healthy and strong and free from disease.' The Indians of Michoacan (Bartels, p. 168), in Central Mexico, believe that, if the leaf of a certain plant, when placed on the sore place of the body, stays there, the man will recover; if it drops off, his death is certain. The Mayas of Yucatan are said to have used a crystal for purposes of prognostication. In other parts of the continent the medicine-men, the priests of the Mayas, used to cast lots in order to determine what offering should be made for the restoration of the patient to health.

13. Transference of disease, 'scape-animals,' etc.—The idea of curing a sick person by transferring the disease or illness with which he is afflicted to some other creature, animal or human, is met with in various regions of primitive America. Some of the Nahuas or Aztec peoples of ancient Mexico (Gerste, p. 47) had the custom, in cases of violent fever, of fabricating a little dog of maize-flour, which was then placed on a maguey-plant in the public way; it was believed that the first passer-by would carry off the disease, and thus enable the patient to recover. In like manner, certain Peruvian coastal tribes used to expose on the public road the clothes of the sick man, in the belief that any passer-by who touched them would take the disease upon himself and so relieve the patient.

14. The animal world as the cause of disease.—A typical American Indian legend of the origin of disease is that of the Cherokee reported by Mooney, and given at length in art. CHEROKEES (vol. iii. p. 505). According to this myth, the animals became so offended and outraged at the carelessness of man and the invasions of their rights on the part of mankind that they held a council and determined to obtain revenge by each of them inflicting some disease upon their human oppressors. This they did, the smallest as well as the greatest providing his share. This is why the incantations and rites of the Cherokee medicine-men are so full of references to animals, and why each disease is represented as being caused by some one of them (the interesting details will be found in Mooney's monograph upon this subject). As a result of the action of the animals, the legend goes on to state, all the plants held a council and resolved to present man with remedies for all the diseases inflicted upon him by the former. Thus it happens, also, that for every disease brought about by the animals, there is a remedy to be found in the plant world. The idea of the origin of disease from the animal world obtains among many other American tribes as well, and the doctrine sometimes suggests comparison with the modern scientific theories as to the microbe origin of many human diseases. Among the Klamath Indians of Oregon, birds such as the wood-pecker, the lark, the crane, and various sorts of ducks are believed to be the causers of disease. With them also the otter is made responsible for smallpox.

15. Natural phenomena as causes of disease.—With some American Indian peoples, the shadow of another person is often harmful. Among the Shushwap of British Columbia (Boas, 6th Rep. p. 92) widows and widowers, while observing mourning regulations, 'must avoid letting their shadows fall upon a person, as the latter would fall sick at once.' Similar beliefs prevail among the Bilqula (7th Rep., 1891, p. 13). Lightning, the moon's light, etc., are sometimes supposed to cause illness. The Klamath Indians seem to have believed that the wind had something to do with the causation of disease. In some of the incantations of these Indians the west wind, in particular, is represented as 'blowing disease' out of its mouth; the rainstorm also 'calls up' disease.

16. Human beings as causers of disease.—Besides enchantment, witchcraft, sorcery, and other active procedures of medicine-men and medicine-women, by means of which sickness or disease is caused in another individual or transferred to him, there are other ways in which men and women may infect one another or bring about a condition of ill-health. As may be seen from the abundant data in Ploss's *Das Weib*, the menstruating woman is often regarded as a disease-bringer or a disease-causer, and her segregation is justified for that reason. Among the Songish Indians of Vancouver Island, according to Boas (6th Rep. p. 22), 'menstruating women may not come near sick persons, as they would make them weak.' The maximum theory of woman's responsibility for disease is met with among the Chiquitos of Bolivia, concerning whose 'medical code' Charlevoix states (Gerste, p. 45) that 'it consists of two prescriptions,—first, to suck the part of the body of the patient affected, and, second, to kill some woman, since women are responsible for all the misfortunes of mankind.' Among the Shushwap Indians of British Columbia, according to Boas (*l.c.* p. 90), 'women during their monthly periods are forbidden to cook for their families, as it is believed that the food would be poisonous.' Among the causes of disease or sickness given by the shamans of the Shushwap (p. 94) are 'that a woman passed by the head of the patient, or that the shadow of a mourner fell upon him.' Ideas cognate, more or less, with the 'evil eye' superstitions of the Old World are met with in various parts of primitive America. The shamans of many tribes (*e.g.* Shahapint, Klamath, and other peoples of the Oregonian-Columbian region) are believed to be able to 'shoot' diseases from their eyes. Against these instances of maleficent human beings may be cited cases of *twins as disease curers*. As already noted in art. CHILDREN (vol. iii. p. 526), several American Indian tribes, particularly in the North Pacific coast region, believe that twins are gifted with the power of curing diseases.

Thus, among the Kwakiutl (Boas, 5th Rep. p. 51), twins, who are thought to be transformed salmon, 'have the power of curing diseases, and use for this purpose a rattle called *K'oogaten*, which has the shape of a flat box about three feet long by two feet wide'; among the Nak'ongylisla (6th Rep. p. 62), 'twins, if of the same sex, were salmon before they were born. . . . The father dances for four days after the children have been born, with a large, square rattle. The children, by swinging this rattle, can cure disease and procure favourable winds and weather.'

17. Soul and disease.—In primitive America a great variety of ideas as to the relationship of the soul to disease and kindred phenomena of the human body prevailed. Indeed, we meet with all grades—from the simple belief of the Arawakan Macheyengas of eastern Peru, who, according to Dr. W. C. Farabee (*Proc. Amer. Antiq. Society*, N.S., xx.), think that the soul 'has nothing to do with life, sleep, disease, or death,' to the elaborate and quite metaphysical doctrines of some of the tribes occupying higher cultural stages, where life, sleep, disease, and death have often to be interpreted in relation to the existence of a plurality of souls, constituting sometimes a hierarchical series. Among the Indians of the North Pacific coast regions there are some (for example, certain tribes of the Fraser River, in British Columbia) who believe in the existence of 'several souls, the loss of one of which causes partial loss of life, *i.e.* sickness, while the loss of all, or of the principal one, entails death'; but, according to Boas (*Bull. 30 BE*, pt. ii. p. 617), the idea that the 'life' is associated with the vital organs (blood, breath, etc.), the loss of which causes death, 'is not strongly developed among the American aborigines.' The Hidatsa Indians of the Siouan stock,

like the Fraser River tribes, believe in a plurality of souls, as do a number of other American peoples. The doctrine of souls and of disease among the Chinook Indians has been discussed by Boas (*JAFI*, 1893, pp. 39-43). Here there are said to be two souls, a larger and a smaller; when a man is sick, it is because the latter has left his body, and he recovers when the shaman or medicine-man has caught the soul and returned it to him. In various parts of America the devices for 'soul-catching' are sometimes detailed, with extensive ceremonial, ritual, etc. Among the Tlinkit, Haida, and Tsimshian Indians, according to Boas (*5th Rep.* p. 58),

'their art consists in extracting the sickness or in finding and restoring the soul of the sick person. In trying to find it, three or four shamans sing and rattle over the sick person until they declare they have found the whereabouts of his soul, which is supposed to be in the possession of the salmon or *otlaen* (candle-fish), or in that of the deceased shaman. Then they go to the place where it is supposed to be, and by singing and incantations obtain possession of it, and enclose it in a hollow carved bone. Then mountain-goat tallow, red paint, eagle-down, and other valuable objects are burnt, and the soul held over the fire. The bone is then laid upon the sick man's head, the shaman saying, "Here is your soul. Now you will be better and eat again." Sometimes the soul is supposed to be held by a shaman, who is paid for returning it.'

The soul of an individual can be removed from his body through the 'magic' of his enemies, their more powerful *orenda*, to use the term of Hewitt, and can be brought back only by the exercise of the same practices of a higher order or a greater cunning. Among the Songish Indians the lower sort of shamans, or *siwa*, who are generally women, are able to cure such diseases as are not due to the soul's absence from the body. The higher class of shamans, or *squnādm*, are able to see the soul and to catch it when it has left the body and its owner is sick. A man becomes a *squnādm* by intercourse with supernatural powers in the woods, where he acquires a guardian spirit, 'called the *tl'k'ayin*, corresponding to what is known as the *tamanowus* in the Chinook jargon, and "medicine" east of the Rocky Mountains.' The method of procedure of the *squnādm* in disease-curing and soul-catching is thus described by Boas (*6th Rep.* 30):

'When he returns from the woods, the shaman is able to cure diseases, to see and to catch souls, etc. The best time of the day for curing disease is at nightfall. A number of people are invited to attend the ceremonies. The patient is deposited near the fire, the guests sit around him. Then they begin to sing and beat time with sticks. The shaman (who uses no rattle) has a cup of water standing next to him. He takes a mouthful, blows it into his hands, and sprinkles it over the sick person. Then he applies his mouth to the place where the disease is supposed to be, and sucks at it. As soon as he has finished sucking, he produces a piece of deer-skin or the like as though he had extracted it from the body, and which is supposed to have produced the sickness. If the soul of the sick person is supposed to be absent from the body, the shaman sends his *tl'k'ayin* (not his soul) in search. The *tl'k'ayin* brings it, and then the shaman takes it and puts it on the vertex of the patient, whence it returns into his body. These performances are accompanied by a dance of the shaman. Before the dance the *siwa* must give a name to the earth, which else would swallow the shaman. When acting as conjurer for sick persons, he must keep away from his wife, as else his powers might be interfered with. He never treats members of his own family, but engages another shaman for this purpose. It is believed that he cannot cure his own relatives. Rich persons sometimes engage a shaman to look after their welfare.'

Shamans are able to make people sick, no less than to cure them of illness. The Nutka Indians, according to Boas (*6th Rep.* p. 44), have the following curious belief as to the cause of sickness:

'The soul has the shape of a tiny man; its seat is in the crown of the head. As long as it stands erect, the person to whom it belongs is hale and well; but, when it loses its upright position for any reason, its owner loses his senses. The soul is capable of leaving the body; then the owner grows sick, and, if the soul is not speedily restored, he must die. To restore it, the higher class of shamans, called *kuk-atsmaah* (soul-workers), are summoned.'

Among the Kwakiutl Indians (p. 59):

'If a man feels weak and looks pale, the seer (shaman) is

sent for. He feels the head and root of the nose of the patient, and finds that his soul has left his body.'

The soul is caught again at night by the shaman to the accompaniment of incantations, etc., as already described for the Songish. Among the Shushwap the bringing back of the soul is an elaborate performance. Among the Bilqula (Bel-lacoola) the following belief obtains (*7th Rep.* p. 14):

'The soul is believed to dwell in the nape. It is similar in shape to a bird enclosed in an egg. If the shell of the egg breaks and the soul flies away, its owner must die. Shamans are able to see and to recover souls. By laying their hands on the nape of a person they are able to tell whether his soul is present or whether it has left the body. If the soul should become weak, they are able to restore it to its former vigour. If a person swoons, it is believed that his soul has flown away without breaking its shell. The shaman hears its buzzing wings, which give a sound like that of a mosquito. He may catch and replace it in the nape of its owner. If the soul leaves the body without breaking its shell the owner becomes crazy.'

Unlike many other Indian tribes, the Bilqula believe that the art of shamanism is a direct gift of the deity called *Sno*, obtained during illness, and not procurable by means of fasting, praying, etc. Among the Chilliwack, according to Hill-Tout (*Rep. on Ethnol. Surv. of Canada*, 1902, p. 9), the shaman sends his own soul out to catch the soul which has escaped from the body of his patient. Among the Twana Indians, who have the practice of 'soul-catching,' the reason given for its performance at night is that night on earth corresponds to day-time in the spirit-world. Among the Klamath Indians of Oregon, the treatment of the sick takes place in the winter-house in complete darkness.

18. Ghosts or spirits of the dead and disease.—An opinion met with among many of the aborigines of America is that, in some way or other, the ghosts or spirits of the dead are responsible for the diseases and sicknesses that afflict mankind. Among the Kwakiutl of Vancouver Island, to see the ghosts of the dead, when they re-appear on earth, entails sickness and death (Boas, *5th Rep.* p. 43); with certain Siouan tribes, to touch them or be touched by them as they move unseen through the air has the same effect. Many peoples, however, believe in an active rôle of these spirits in afflicting human beings with disease; this sometimes amounts to taking possession of the body or of some part or member of it. Among the coast Salish (Boas, *ib.* p. 52), it is believed that 'the touch or the seeing of ghosts brings sickness and death.' So, also, with the Songish (*6th Rep.* p. 28), who believe that 'their touch causes sickness. They make those who have not regarded the regulations regarding food and work mad. Their touch paralyzes man. When one feels afraid, being alone in the woods or in the dark, it is a sign that a ghost is near.'

The following is reported by Boas (*6th Rep.* p. 61) from the Kwakiutl:

'The sight of a ghost is deadly. A few years ago, a woman, who was weeping for her mother, suddenly fell into a swoon. The people first believed her to be dead, and carried the corpse into the woods. There they discovered that she continued to breathe. They watched her for two days, when she recovered. She told them that she had seen two people enter the house. One of them had said: "Don't cry; I am your mother's ghost. We are well off where we live." She had replied: "No; I mourn because you have left me alone." Then she had fallen into a deep swoon.'

This explanation of swooning, fainting, and similar states is common all over primitive America. Among the Shushwaps (p. 93), 'when a person faints, it is a sign that a ghost pursues him.'

19. The hereafter of those dying from sickness and disease.—Among the American Indians, one frequently meets the idea that those dying by violent deaths, women dying in childbirth, and people whose death is due to sickness or disease go to certain special abodes in the hereafter. Thus the Tlinkit, according to Boas (*5th Rep.* p. 47),

'believe that the soul, after death, lives in a country similar to ours. Those who have died a violent death go to heaven, to a country ruled by Tahit; those who die by sickness (also women dying in childbirth) go to a country beyond the borders of the

earth, but on the same level. It is said that the dead from both countries join during the daytime. I believe that this idea, which is also held by the Haida, must be ascribed to Eskimo influence.

A special heaven for women dying in childbed is met with elsewhere among uncivilized tribes; also in ancient Mexico.

20. Disease and the gods and demons.—The conception of disease as the work of deity or of demons has not yet vanished altogether from the minds of the civilized Christian peoples of the globe, and it is strongly entertained by many tribes of American Indians representing practically all grades of culture in the primitive New World. The Iroquoian Onondaga, *e.g.*, believe that the evil demons known as *Hondo* cause both disease and misfortune among men and women, but, when appeased by dances and other ceremonies and by offerings of food, tobacco, and the like, they become friendly and protect them from sickness and disease, as well as from witchcraft. In the dances and kindred ceremonials of the Iroquoian 'medicine-societies,' women masked, representing these disease-demons with distorted human faces, are employed. The secret medicine-societies of the pagan Seneca have recently been studied by A. C. Parker, himself of Iroquoian descent. These societies serve for the healing of disease and the furtherance of well-being in the broadest sense. In a Tsimshian myth (Boas, *5th Rep.* p. 50) 'the master of the moon,' the pestilence (*Haiatilog*), appears as a powerful deity—something ascribable to the influence of the neighbouring Kwakiutl. The Sacs and Foxes believe that the spirit of sickness, *Apenaweni*, hovers about, seeking entrance into the lodges of the Indians. Among the Nez-Percé Indians there is a general ceremony, lasting from 3 to 7 days, carried on by all the men of the community who are between 18 and 40 years of age, with the object of conquering *Mawish*, the spirit of fatigue (Bartels, p. 235); and the Indians believe firmly that by means of it they ensure themselves great bodily strength and capacity for resistance to fatigue.

Water-demons are sometimes credited with keeping the souls of men, and thus causing various diseases and sicknesses. Examples of this are the *Tsakan* of the Mexican Coras, described by Preuss, and the *Pujo* of the Indians of the Bolivian-Argentinian border-land, of which an account is given by Boman (*Antiq. de la rég. and.*, vol. i. [1908]). In the case of the *Pujo*, a rather complicated offering is made, after which the soul is called back. The soul is also called back when one is 'frightened to death.' Among the Ipurina Indians of Brazil, persons whose recovery from illness or disease is not expected, and upon whom all the arts of the shaman have been exercised in vain, are devoted to *Inkisi*, 'the great water-snake,' a prominent figure in their mythology. Ehrenreich thus describes their actions in this matter (cited in Bartels, p. 248):

'If there are any sick people who are beyond anything but the help of the Snake, one of the shamans proceeds to the river to call the Water-Spirit. After all accompanying him have disappeared, the Spirit comes forth, and asks first after what gifts have been brought. If he is satisfied with these, he declares himself ready for the reception of the sick man. The latter is stupefied with tobacco and thrown into the river, on the bottom of which he falls "with a dull thud," and wakes up. The Water-Spirit takes him into his house and restores him. The method of cure is not clearly given, but the recovered patient remains for ever in the realm of the Water-Snake, and lives there happily and gloriously, with no desire to return to earth. The accidentally drowned find the same reception, while those already dead on earth are rejected. Moribund people are often hurried into the next world by the clubs of the shamans.'

21. Disease as punishment.—The conception of disease as punishment for the known or unknown sins and offences of the individual, the family, or the community is wide-spread, and is not confined to any particular stage of culture, either in the Old

World or in the New. Primitive America furnishes a number of interesting examples. The breaking of tabus, and the disregarding of various other religious or semi-religious commandments and regulations, are believed by tribes all over the continent to be followed by punishments which often take the form of some sickness or affliction of body or mind, or of both together. The breaking of food-tabus, in particular, is thought to bring diseases of various sorts on the guilty; likewise, the non-observance or neglect of the customs and ceremonies relating to menstruation, puberty, childbirth, *coitus*, etc. The Mayas of Yucatan and the Aztecs of ancient Mexico, both representing the highest reaches of primitive American civilization, believe that certain diseases were sent upon the individual, etc., in consequence of sin; the former holding also that it sometimes was for sins unconfessed. This topic is discussed by Preuss in his article on sin in ancient Mexican religion (see Lit.). It appears that the Aztecs believed diseases and misfortunes of many sorts to be due to the sinful nature of man. Sacrilege and offences against the State were punished by the gods. Tezcatlipoca, *e.g.*, sent leprosy, sexual diseases, gout, skin diseases, dropsy, etc. Father Gerste (p. 19) says on this point that, in cases of severe illness or grave diseases, the 'doctor' told the patient that he must have committed some sin, and kept questioning him until he confessed some offence—very old, perhaps, and almost forgotten. The principle of medication here was to purify the soul first, and then the body might get well. Certain Central American peoples, of the Mayan stock, had practically the same ideas and method of procedure by confession, etc.

22. Special and protective deities of shamans, etc.—Among not a few tribes, especially those belonging to the ancient civilized peoples of Mexico, Central and South America, the 'doctors,' 'medicine-men,' etc., had their special protective divinities. Such, *e.g.*, were, among the Aztecs and closely related peoples, *Toçi*, the great, ancient mother, particularly friendly to women-doctors and midwives, who figured in the ceremonials in her honour; *Xilonen*, a goddess to whom a young maiden was offered in sacrifice; *Tzapotla tenan*, or 'the mother of Tzapotlan,' to whom was attributed the discovery of the medicinal resin called *oxil*, and who was specially worshipped by male 'doctors'; *Ixtlilton* (also called *Tlaltecuin*), god of song, dancing, games, etc., into whose temple sick children were taken, to dance (if they could) before his image, and drink of the holy water preserved in the sanctuary. The deities *Tlaltecuin*, *Xochicauacan*, *Oxomoco*, and *Cipactonal* especially were credited with the beginnings of medical art. Among the Mayas, the culture-hero, *Itzamna*, is said to have been the originator of medicine; the same thing is said of *Xmucan* and *Xpiyacoc* among the kindred Quichés of Guatemala. The culture-hero, as primal shaman, appears also in S. America, *e.g.*, in the Yurupari legend reported by Stradelli from the head-waters of the Orinoco. The Guarayan (Bolivia) *Abaungui* prepares the first *chicha*, or intoxicating drink, from maize. Many myths relate that the 'medicine' was received directly or indirectly from the gods themselves or their representatives, the Twins, who figure so conspicuously in the mythologies of the south-western United States, etc.; the 'transformers' of the North Pacific coast; or such animal-deities as the coyote in the Rocky Mountain region and among the Plains tribes. Hoffman has recorded the great Ojibwa myth of the transference to man by the culture-hero, *Manabozho*, of the 'grand medicine.' Cnshing has also published the Zuñi account of the teaching of 'medicine' to the first

men by the Twins, who are the chief culture-figures in Pueblo mythology.

23. Human sacrifice as a cure for disease.—The sacrifice of animals, etc., as a more or less religious ceremonial in connexion with the ritual of 'medicine' is known from various regions of the globe, where the process of getting well in body is carried out on lines similar to getting well in mind, and maintaining harmony between man and the powers beyond and above him. In this way human sacrifice sometimes occurs. Some of the Indian tribes of ancient Mexico, according to Orozco y Berra, cited by Father Gerste (p. 19), used, in cases of very grave illness of the father or the mother, to kill the youngest child as an expiatory sacrifice.

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A. F. CHAMBERLAIN.

DISEASE AND MEDICINE (Assyro-Babylonian).—The chief difficulty in treating of the subject of diseases in Babylonia is to separate the ideas of magic from medicine proper in the native methods of healing. The Assyrian physician never shook himself entirely free from the more supernatural side of his profession, and, apart from the magical incantations for the sick, even the more scientific medical texts depend largely on 'white magic.' The latter consist, for the most part, of short material recipes on which much of our knowledge of the Assyrian pharmacopeia rests, but they also prescribe spells to be used simultaneously with the administration of drugs. It is therefore clear that, although many of the recipes in use were efficacious from a purely medical standpoint, they were frequently combined with a series of chanted *abracadabra* of more value to the anthropologist than to the student of medicine.

The present inhabitants of the plains of Mesopotamia and the hills of the neighbourhood are probably liable to the same diseases as their ancestors were some thousands of years ago, and we may therefore start on this hypothesis. Sudden plagues, of which cholera is one of the most appalling in its effects, are met with at all periods of the history of this country:¹ dysentery, typhoid,

and like diseases, common to all countries where the drainage is of a casual nature; smallpox and similar pests; malaria, particularly in the swamps of Babylonia; and such other ailments as are common to all mankind without distinction of locality. Particularly, too, must be mentioned the peculiar skin-eruption known variously as the 'Baghdad boil,' or 'Mosul (or Aleppo) button,' and the various forms of ophthalmia common to Eastern peoples. Naturally there are many forms of sickness on the cuneiform tablets that we cannot identify with certainty until our knowledge of the medical literature is more advanced.

The principal causes to which sickness was ascribed were the visitation of some god or goddess, the attack of a devil, and the machinations of sorcerers.¹ Demoniac possession was firmly believed in, and it is for this reason that the priest was as likely to be called in to help a patient as the real doctor. The whole of the cuneiform incantations are full of the belief that some god, demon, or ghost is plaguing the sick man, and must be expelled before the patient can be healed; and similarly we may presume that the so-called Penitential Psalms have their origin, not in the remorse of the suppliant, but in his actual physical malady, which he believes to be due to some supernatural blow. The medical texts are often explicit on this point: 'When (a man) is smitten on his neck, it is the hand of Adad; when he is smitten on his neck, and his breast hurts him, it is the hand of Ištar on the necklace.'² 'When a man's temples pain him, and the neck muscles hurt him, it is the hand of a ghost.'³ 'When a ghost seizes upon a man, then mix (various substances) together, anoint him (with them), and the hand of the ghost will be removed.'⁴

There is little doubt that sickness, as understood among the Assyrians, may be reckoned to be due to breaches of the savage tabu. The man so attacked has transgressed a ban; indeed, much of the incantation series known by the name of *Šurpu* deals with long lists of possible uncleanness which has caused the patient's malady, the word used being *mamit*. In one tablet there is a categorical list of as many as one hundred and sixty-three *mamit*, or tabus, each severally described briefly in one line, and the magician is supposed to repeat all these, as it is hoped that he will thereby light on the correct cause of the trouble, diagnose his case properly, and show that he possesses a knowledge of the cause of the sickness. That physical ills were held to be the result of incurring some tabu of uncleanness is quite clear from certain *mamit* of the Third Tablet, which are as follows:

To go before the Sun-god when 'ātsār (i.e. under a tabu) (l. 114), to touch a man when one is under a tabu, or to pray in the same state (ll. 115, 116), or to hold converse, eat the bread, or drink the water of one under a tabu (ll. 117-119), or to drink what he has left (l. 120); or, in the Second tablet, to go before a man under a tabu, or to have a man under a tabu come before one (ll. 99, 100), to sleep on the bed, sit on the chair, or to eat or drink from vessels, belonging to such a man (ll. 101-104).

According to modern ideas, many of these might be merely an unintelligent development of the principle of infectious diseases (which will provide an explanation in part), but the first three show distinctly that there are other principles in question. The savage tabu of 'uncleanness' is here in a later dress, and sickness is considered as the result of a breach of this very intricate belief. For, if the man for whom the series *Šurpu* provides a means of relief be not really and obviously physically ill, there is no reason for the existence of such a series; we cannot suppose that a man called in a priest to relieve him from the obscure tabus which he might have incurred, unless there was some unusual physical condition demanding it.

¹ For these, see art. CHARMS AND AMULETS (Assyr.-Bab.).

² S. 951.

³ S. 1063.

⁴ K. 4075 + cf. K. 4609 b.

¹ Joshua the Stylite (ed. Wright, Camb. 1882, p. 17) says, 'as all the people had sinned, all of them were smitten with the plague' in the year of Alexander. The destruction of Sennacherib's army (2 K 19³⁵, is 37³⁶) must have been due to some such cause.

Just as we may presume the 'unwitting' tabus (in whatever way the word ܐܬܘܒܐ may be translated) of the OT to have manifested themselves in some physical way, so must we suppose that an Assyrian would not have recourse to a priest-physician unless absolutely driven by pain or fear. Sickness is due to a demoniac or Divine influence, and it is well known that a savage fears to incur a breach of tabu from some ill-defined sense of danger from god or devil; it is clear, therefore, that the Assyrians had the same terror in their minds when they edited the *Surpu*-series for the benefit of sick men. The sorcerer must discover—or trick the powers into believing that he has discovered—the tabu which the patient has transgressed, and he can then proceed to cleanse the man from his breach, and lift the ban from him.

The principal god connected with healing is Ea, but it is his son Marduk who is appealed to by the physician as intermediary with the higher power. Marduk, when called on for help, is supposed to repair to his father to ask him for his advice as to what the sick man must do to be healed. This episode is constantly repeated in cuneiform incantations for the sick; indeed, to such an extent was it recognized as the usual procedure that it is frequently inserted in these texts in one line containing abbreviations of the three principal sentences, thus: 'Marduk hath seen'; 'What I'; 'Go, my son.' The full formula is as follows:

'Marduk hath seen him (the sick man), and hath entered the house of his father Ea, and hath said, "Father, headache from the under world hath gone forth."¹ Twice he hath said unto him, "What this man hath done he knoweth not; whereby shall he be relieved?" Ea hath answered his son Marduk, "O my son, what dost thou not know, what more can I give thee? O Marduk, what dost thou not know, what can I add unto thy knowledge? What I know, thou knowest also. Go, my son, Marduk. . . .'

Then follows the actual prescription for the patient. This method of bringing in a Divine episode is nothing more than a development of the principle of the Word of Power, which tradition demands shall be one of the sorcerer's most potent aids in spell-working. A scene is represented on certain of the magical plaques which is apparently intended to portray the sick man and the forces arrayed against him: the celestial powers, demons, protecting gods and spirits, the sick man on his bed, etc., form an interesting picture (see Frank, *LSSt* iii. 3).

Now, this Word of Power, so generally recognized in all magic, consists in its simplest form of the name of some Divine being or thing invoked against the power of evil which the physician is expelling. Hence many of the Assyrian incantations end with the line, 'By Heaven be ye exorcized! By Earth be ye exorcized!' and numerous gods are invoked in the same way.

Two other concomitants to the exorcisms are necessary to the exorcist: first, the knowledge of the name or description of the devil which is being expelled; and, second, some material with either medicinal or magical value whereby the cure may be effected. The former is as necessary as the Word of Power for a complete incantation; when the wizard has a knowledge of the name of his foe, or, in the case of demons, a full description of the ghost attacking the man, he has assumed some considerable influence over him which will finally bring him entirely into subjection. The genesis of such a belief is to be sought in the same source as the collateral superstitions where portions are collected of the hair, nails, or footprint-dust of any one whom the enchanter wishes to bewitch, or the waxen figures made in the victim's likeness. It is enough if something belonging to the person, not necessarily concrete, has been secured, and the

¹ This is the only variation in the formula, being the first line of the tablet.

name is considered as an equivalent for more tangible evidence, such as nail-parings.

The Assyrian sorcerer is compelled to recite long lists of ghosts or devils when he is trying to conjure the evil away from his patient. The idea is that, since obviously he cannot obtain the more fleshly portions of his foe as he might do in the case of a human enemy, he shall mention, in place of this, the name or powers of all possible evil spirits, and ultimately, by his much speaking, hit on the correct identification of the demon, who will then admit the magician's superiority. Hence we find in the Assyrian texts such constantly recurring phrases as, 'Whether thou art an evil spirit, or an evil demon, or an evil ghost, or an evil devil, or an evil god, or an evil fiend, or sickness, or death, or phantom of night, or wraith of night, or fever, or evil pestilence, be thou removed from before me';¹ or even longer descriptions of ghosts of people who have died unnatural deaths, or who have been left unburied, and whose only hope is to torment the living until they perform the necessary rites to give them peace.²

The third and last element of the incantation is some drug, to which in early times a magical, Divine potency was attributed, or some charm or amulet, or, in the broadest sense, some material which will aid the physician in his final effort. The simplest is pure water, which was frequently sprinkled over the patient as a cleansing medium, and this is easily intelligible. One incantation (*WAI* ii. 51b, line 1 ff.) runs thus: 'All that is evil, . . . [which exists in the body] of N. [may it be carried off], with the water of his body, the washings from his hands, and may the river carry it away downstream!' There seems also to have been some principle of enclosing the possessed man in a ring of flour or other powder spread in a circle on the ground, as a kind of *heram* through which spirits could not break. For instance, after an 'atonement' ceremony has been made, the wizard fumigates the man with a lighted censer, and then throws away the 'atonement' (in this case a kid) into the street; he then surrounds the man with flour,³ as a magic circle through which no evil demon can pass to injure him. In another incantation the sorcerer says of certain figures which he has made:

'On their raised arm I have spread a dark robe,
A variegated cord I have wound round their hands, I have placed tamarisk (and) palm-pith,
I have completed the *usurtu* (magic circle), I have surrounded them with a sprinkling of lime,
With the flour of Nisaba (the corn-god), the tabu of the great gods, I have surrounded them,
I have set for the Seven of them, mighty-winged, a figure of Nergal at their heads.'⁴

The tamarisk (or some allied species of tree) was held aloft in the hand during the priest's exorcism; one of the rituals prescribes this to the magician, who says, during his ceremonial:

'The man of Ea am I, the man of Damkina am I, the messenger of Marduk am I, my spell is the spell of Ea, my incantation is the incantation of Marduk. The ban of Ea is in my hand, the tamarisk, the powerful weapon of Anu, in my hand I hold; the date-spates (?), mighty in decision, in my hand I hold.'⁵

On one of the late Hebrew magical bowls discovered at Niffer there is the figure of a man rudely

¹ See Thompson, *Devils and Evil Spirits of Babylonia*, London, 1903, i. 16-17, ll. 153 ff.

² *Ib.* xxiv ff., also *Semitic Magic*, p. 7 ff.

³ Tablet XI. of the *Asakku*-series (Thompson, *Devils*, ii. 35). This is probably the meaning conveyed by *amelu kudti kusurra esir*, and not as the present writer has translated it in the passage. See also Thompson, *Semitic Magic*, p. lvii ff.

⁴ Zimmern, 'Ritualtafel,' in *Beiträge zur Kenntnis*, etc., ii. 169. The curious may see much about these magic circles in the Middle Ages in Francis Barrett, *The Magus*, 1801, p. 99 ff., or even what is believed about them at the present day by certain who dabble in the 'occult,' in Mathers' *Book of Sacred Magic*, 1898, p. xxxvii.

⁵ *Utukku*-series, Tablet III. 1. 204 (Thompson, *Devils*, i. 23). The word translated 'tamarisk' is *GIS.MA.NU*, undoubtedly some form of tree, the Assyrian equivalent being *eru*, probably the Syriac 'arā'.

drawn, holding up the branch of some tree in his hand.¹ From Sozomen² we learn that, when Julian was about to enter a temple in Gaul, the priest, in accordance with the pagan custom, sprinkled water upon him with the branch of a tree, doubtless symbolical of a purificatory rite. It is possible that we may see some such ceremony prescribed in the Assyrian cleansing rite:

'Perform thy goodly incantation and make perfect the water thereof with priestcraft, and with thy pure incantation do thou cleanse (the man?); and take a bundle of twigs (?), pour the water thereof on it, and the laver (or water) that cleanseth the temple of the gods,' etc.³

The comparison is, however, uncertain, as we have no right to assume that in this case the water was sprinkled upon the sick man; but Sozomen's anecdote is of value as showing that branches were used in sprinkling water.⁴ There is, however, a parallel to the Assyrian rite in another tablet,⁵ where Ea says:

'Take a bundle of twigs (?) and take water at the confluence of two streams, and perform thy pure incantation over this water, and cleanse (the man) with thy pure exorcism, and sprinkle the man, the son of his god, with this water, and bind his head with . . .'

Of other mystic plants, we find the *piri* (which is probably the Syr. *per'a*, St. John's wort), the *balti* (which may be the Syr. *bal*, the caper), and the *hulā* (prob. the Syr. *hlā*, the fleabane) all used to hang up on the doors of houses when a ceremony was going on, as a prophylactic against demons.⁶ The first-named, the St. John's wort, has always had great power in magic. 'Gathered on Midsummer Eve, or on Midsummer Day before sunrise, the blossoms are hung on doorways and windows to preserve the house against thunder, witches, and evil spirits.'⁷ The number of plants which occur in the medical and magical texts is very large; but, unfortunately, they are difficult to identify, and the lexicographical tablets which give the names of hundreds do not really afford much clue.

Before proceeding to the medical recipes, we have to notice that peculiar method of healing, used by all savages, and known in modern times as 'sympathetic magic.' It is quite unnecessary here to go into the various forms in which this occurs in modern witchcraft; it is enough to take as a text the homeopathic 'hair of the dog that bit one,' and quote some of the cuneiform texts in which this method is employed.⁸ The best-known examples occur in the *Šurpu*-series, where the magician recites various formulæ over a clove of garlic, a date, a flock of wool, some goat's hair, etc., pulling each in pieces and burning it as he does so. As he destroys each, so will the sickness depart. One quotation of an incantation will show the method:

'As this date is cut, and cast in the fire,
The devouring flame consumes it,
Never to return to its root branch,
Nor grace the board of god or king;
So may the ban, the tabu, the pain (?), the woe (?),
The sickness, the agony, the sin, the misdeed, the wrong-
doing, the iniquity,
The sickness which is in my body, my limbs, my muscles,
Be cut off like this date,
So may the devouring flame consume it,
The tabu go forth, and I behold the light!'⁹

This is the most marked form of sympathetic magic, but the principle is used obviously in much

¹ Hilprecht, *Explorations in Bible Lands*, Edinburgh, 1903, p. 447.

² *HE*, bk. vi. ch. vi.

³ Thompson, *Devils*, ii. 143; *Semitic Magic*, 213.

⁴ In King's *Babylonian Magic and Sorcery*, p. 95, at the end of one of the 'Prayers of the Raising of the Hand,' we find the direction, 'In the night before Istar thou shalt sprinkle a green branch with pure water.'

⁵ *Ti*-series, Tablet P (Thompson, *Devils*, ii. 95; *Semitic Magic*, 212).

⁶ *Urukku*-series, Tablet B, l. 72 (Thompson, *Devils*, i. 137).

⁷ Frazer, *GB*² iii. 333 ff. See art. CHARMS AND AMULETS (Assyr.-Bab.).

⁸ The whole question is thoroughly gone into in Frazer's *GB*² i. 9 ff.

⁹ Zimmern, 'Šurpu,' in *Beitr. zur Kenntnis*, etc. i. 29.

of the cuneiform priestcraft, and it occurs in various forms in the examples given in this article.

The name of the physician proper was *asû*, but, as the treatment was frequently of a magical nature rather than purely medical, it was oftener the *asipu*-priest than a doctor who was called in to heal a sick man. The *asipu* is the magician who can release the patient from the tabu under which he lies; the same word occurs in Hebrew under the form *assâph*; and the name in Assyrian for the incantation is *šiptu* (from the same root).¹ He claims in his exorcism that he has come supported by the power of Ea, Damkina, and Marduk:

'The man of Ea am I, the man of Damkina am I, the messenger of Marduk am I. The great lord Ea hath sent me to revive the . . . sick man; he hath added his pure spell to mine, he hath added his pure voice to mine, he hath added his pure epistle to mine, he hath added his pure prayer to mine; the destroyer(s) of the limbs, which are in the body of the sick man, hath the power to destroy the limbs—by the magic of the word of Ea may these evil ones be put to flight.'²

Similarly, when the priest comes into the house of the patient, he declares that he is aided by several gods:

'When [I] enter the house, Šamaš is before me, Sin is behind [me], Nergal is at [my] right hand, Nisib is at my left hand; when I draw near unto the sick man, when I lay my hand on the head of the sick man, may a kindly spirit, may a kindly guardian angel stand at my side! Whether thou art an evil spirit or an evil demon, or an evil ghost, or an evil devil, or an evil god, or an evil fiend, or sickness, or death, or phantom of night, or wraith of night, or fever, or evil pestilence, be thou removed from before me, out of the house go forth! (For) I am the sorcerer-priest of Ea, it is I who [recite] the incantation for the sick man.'³

He completes the spell of the Third Tablet of the same series with the words:

'O Ea, King of the Deep, [turn thou?] to see; I, the magician, am thy slave. March thou on my right hand, help on my left; add thy pure spell to mine, add thy pure voice to mine, vouchsafe (to me) pure words; make fortunate the utterances of my mouth, ordain that my decisions be happy. Let me be blessed where'er I tread, let the man whom I (now) touch be blessed. Before me may lucky thoughts be spoken, after me may a lucky finger be pointed. O that thou wert my guardian genius, and my guardian spirit! O Marduk, who hieseth (even) gods, let me be blessed where'er my path may be! Thy power shall god and man proclaim, this man shall do thy service, and I, too, the magician thy slave.'⁴

Armed with these heavenly powers, the priest might exorcise any of the demons which assail mankind, and one of the commonest methods of treatment among the priestly gild was an 'atonement.' The word used is *kuppuru* (the noun is *takpirtu*), the same as the Heb. קָפַר, as was pointed out by Zimmern ('Ritualtafeln,' p. 92). The idea in the Assyrian method is that the demon causing the sickness is to be offered a substitute for his victim, and hence a young pig or kid is taken, slaughtered, and placed near the patient. The devil goes forth at the physician's exorcism and takes up its abode in the carcass of the substitute, which can then be made away with, and the harmful influence destroyed. This is fully laid down in one of the magical texts against the *asakku* (provisionally translated 'fever'), where it is told how Ea, the lord of the incantation, in showing a method of treating the sick man, lays a kid before Marduk, saying:

'The kid is the substitute for mankind,
He giveth the kid for his life,
He giveth the head of the kid for the head of the man,
He giveth the neck of the kid for the neck of the man,
He giveth the breast of the kid for the breast of the man.'⁵

Instead of the kid, the substitute might be a sucking-pig, and the directions are to put it at the head of the sick man,⁶ take out its heart and put it above that of the patient, and [sprinkle] its blood on the sides of the bed; then the carcass

¹ On the *asipu*-priest, see Zimmern, 'Ritualtafeln,' p. 91.

² *Urukku*-series, Tablet III. l. 65 (Thompson, *Devils*, i. 9).

³ *Is*. l. 141 ff. (Thompson, *Devils*, i. 15; *Semitic Magic*, xxiv.).

⁴ *Is*. l. 260 ff. (Thompson, *Devils*, i. 27; *Semitic Magic*, xxiii.).

⁵ Tablet N, col. iii. l. 37 ff. (Thompson, *Devils*, ii. 21; *Semitic Magic*, 211). The reader is referred to Frazer's *GB*² for many similar instances of the transference of ills to animals.

⁶ This is rather doubtful, owing to a mutilated line in the text.

must be divided over the man, and apparently spread upon him. The ritual continues with a purification by pure water and fumigation by a censor (as in the story of Tobit), and ends:

'Place twice seven loaves cooked in the ashes against the shut door, and
Give the pig in his stead, and
Let the flesh be as his flesh,
And the blood as his blood,
And let him hold it;
Let the heart (which thou hast placed on his heart)
be as his heart,
And let him hold it. . . .'¹

The migration of demoniac influence to the pig is closely paralleled in the story of the Gadarene swine (Mk 5).² The Indian Muslims of the present day who come to Abdulkadir, the largest mosque in Baghdad, to make a pilgrimage and offer sacrifices, 'vow that if a man who is ill begins to recover he shall go to the shrine.'

'He is stripped to the waist. Then two men lift a lamb or a kid above his head, and bathe his face, shoulders, and the upper part of his body with the blood. While the butcher kills this animal the sheik repeats the first sura of the Koran. They also wrap him in the skin of the animal.'³

The 'twice seven loaves' is paralleled in the Seventh Tablet of the *Šurpu*-series: when a man has incurred a certain tabu, seven loaves of pure dough are to be taken, and, after various ceremonies, the magician makes an 'atonement' for the patient, and puts his spittle on the 'atonement' as symbolical of the removal of the tabu from the man to the substitute. The loaves are then to be carried into the desert to a 'clean place,' as in the Levitical ritual, and left under one of the thorn bushes growing there. At the present day in the Hejaz, if a child is very ill, its mother will take seven flat loaves of bread and put them under its pillow, giving them in the morning to the dogs.⁴ Another exorcism gives directions more fully; Marduk is advised by Ea to take a white kid of Tammūz:

'Lay it down facing the sick man,
Take out its heart, and
Place it in the hand of that man;
Perform the Incantation of Eridu.
(The kid whose heart thou hast taken out
Is unclean (?) meat wherewith thou shalt make
an atonement for this man.)
Bring to him a censor (and) a torch,
Scatter it (the kid) in the street.'⁵

But the Assyrians did not confine the 'atonement' ceremonies to the carcasses of animals; they had other methods for ridding a sick man of his devil, notably that of inducing the incubus to leave the human body to enter a little figure fashioned in the likeness of the patient. The magician took various herbs, put them in a pot of water, sprinkled the sick man with them, and made 'atonement' for him; he then modelled a dough image of his patient, poured out his magic water on him, and fumigated him with incense. Then, just as the water trickled away from his body, the pestilence in his body was supposed to trickle off, the water being caught in some receptacle beneath, and poured forth abroad that the sickness might be dissipated.⁶

Sympathetic magic was likewise called in as an aid in other cases. A sickness-tabu might be removed by the use of charms made of black and white hair, just as they are among modern savage tribes. Three examples from different peoples will be ample to show how closely the Babylonian methods resemble those of other nations.

¹ Tablet N, col. ii. l. 42 ff. (Thompson, *Devils*, ii. 17; *Semitic Magic*, 208). Or for the fifth and seventh line translate with Fossey (*Recueil de Travaux*, new series, x. 183), 'qu'ils (les mauvais démons) s'en emparent.'

² On the custom of sacrificing sucking-pigs among the Greeks, see *AJP*, 1900, p. 256.

³ Curtiss, *Prim. Sem. Rel.*, Lond. 1902, p. 205 f.

⁴ Zwerner, *Arabia*, Edin. 1900, p. 288.

⁵ Tablet XI. of the series *Asakku* (Thompson, *Devils*, ii. 33; *Semitic Magic*, 203).

⁶ Tablet 'T', l. 30 ff. (Thompson, *Devils*, ii. 107; *Semitic Magic*, 159, lii); cf. Skeat, *Thalpy Magic*, Lond. 1900, p. 347.

In India the 'fairy-women' take three different coloured threads and knot them twenty-one or twenty-two times, and when the work is finished it is fastened to the neck or upper arm of the patient.¹ Among the Malays it is customary to make little images of dough of beasts, etc., and to place them on a tray with betel-leaves, cigarettes, and tapers. One of the tapers is set on a silver dollar, with the end of a parti-coloured thread inserted between the dollar and the foot of the taper; this thread the patient holds during the repetition of the charm. The disease-devil is supposed to enter the images, and as soon as this has happened the magician looses three slip-knots and throws them away.² Among the modern Persians, O'Donovan saw a similar method for removing fever; a khan spun some camel's hair to a stout thread, and folding it three times on itself spun it again. He tied seven knots therein, blowing on each one, and this was to be worn on the patient's wrist, a knot being untied each day. When the last knot was loosed, the thread was to be thrown in a ball into the river.³

The prescription, as given in Assyrian, in the Sixth Tablet of the *Šurpu*-series runs as follows:

'He hath turned his [steps?] to a temple-woman (?), Ištar hath sent her temple-woman (?), hath seated the wise-woman on a couch (?) that she may spin a white and black wool into a double cord, a strong cord, a mighty cord, a two-coloured cord, on a spindle, a cord to overcome the ban: against the evil curse of human ban, against a divine curse, a cord to overcome the ban. He (she) hath bound it on the head, hand, and foot of this man; Marduk, the son of Eridu, the prince, with his undefiled hands cutteth it off, that the ban, its cord, may go forth to the desert to a clean place.'⁴

Or again, in the case of headache, a method is recommended, as usual, by Ea to his son Marduk:

'Take the hair of a virgin kid, let a wise woman spin (it) on the right side, and double it on the left, bind knots twice seven times, and perform the Incantation of Eridu, and bind the head of the sick man, and bind the neck of the sick man, and bind the soul of the sick man, and bind up his limbs.'⁵

Without going further afield into details of comparative magic, it is worth mention here that the same superstition is still believed in at Mosul, close to the mound of Nineveh. A recipe for fever was given the present writer by a boy employed on the excavations, in which the physician, in this case a shaiikh, takes a thread of cotton and ties seven knots in it, putting it on the patient's wrist. After seven or eight days, if the fever continues, he must keep it on; if the fever passes, then he may throw it away.⁶

In one of the Assyrian charms for ophthalmia, black and white threads or hairs are to be woven together, with seven and seven knots tied therein, and during the knotting an incantation is to be muttered; the strand⁷ of black hair is then to be fastened to the sick eye, and the white one to the sound eye.⁸ Or in another case (for a disease of the eyes called *amurrikannu*) 'pure strands of red wool, which by the pure hand of . . . have been brought . . . bind on the right hand.'⁹ A parallel to the untying of the knots in the modern charms quoted above is prescribed in one of the Assyrian tablets published by King (*Bab. Magic and Sorcery*, p. 58, l. 99 ff.); the priest must say over the sick man 'Ea hath sent me' three times, and then untie the knot which has been tied; and the man must go home without looking behind him.

We may now for the moment leave the magical side of the physician's art for the more scientific study of drugs and their administration. The efficacy of medicine on an empty stomach was well recognized by Assyrian doctors, and the prescriptions constantly end with directions for such a procedure:

'Bray these seven plants together, and put them in fermented

¹ Ja'far Sharif and O. A. Herklots, *Qanoon-e-Islam*, Madras, 1895, p. 262.

² Skeat, *Malay Magic*, p. 432; see also p. 569.

³ *Merv Oasis*, Lond. 1882, ii. 319. For other instances, see Frazer, *GP* i. 397.

⁴ Zimmern, *Beiträge zur Kenntnis*, etc., p. 33.

⁵ *Ti*, Tablet IX. l. 74 (Thompson, *Devils*, ii. 71; *Semitic Magic*, 166).

⁶ 'Folklore of Mossoul,' *PSBA*, 1906, p. 80.

⁷ The meaning of the Assyrian word is uncertain.

⁸ *WAI* iv. 29*, 4, O. l. 15.

⁹ Haupt, *Akkad. u. sum. Keilschrifttexte*, Leipzig, 1881-82, xi. ii. 45.

drink; at the approach of the star in the morning let the patient drink them without eating, and he will recover.¹

Not only this, but the use of the enema also was well known, the directions being quite explicit:

'An enema (*bus*) of oil thou shalt make, and introduce *per anum*.²

For stomachic troubles there were many remedies. Pains were treated with a mixture of 'salt of the mountain' and *amonu*-salt pounded together and put in fermented liquor, which was to be drunk on an empty stomach, used also as an enema, and sprinkled upon the patient;³ or a mixture of the *nūhūrtu*-plant and seven corns of *ši-ši*, similarly to be used as a draught and an enema.⁴ As a simpler method, the patient was to sit on his haunches and let cold water flow on his head;⁵ or the physician was to lay his head lower than his feet, and knead or stroke the back gently, repeating the formula: 'It shall be good.'⁶ If the patient have colic and his stomach will not retain its food, and there is flatulence, the prescription is to bray up together $\frac{1}{2}$ *ka* of date-juice, $\frac{1}{2}$ *ka* of cassia juice with oil and wine, three shekels of purified oil, two shekels of honey, and ten shekels of the *ammi*-plant. The patient is to drink this before the rising of the *Enzu*-star in the morning, without eating; and then this is to be followed by a draught and an enema of $\frac{1}{2}$ *ka* of *ši-ka*, with which he is also to be sprinkled.⁷ If there are internal pains—the Assyrian being in this case, 'When a man's inside eats him'—he is to be given *haltappanu*-plant and salt pounded up and dissolved in water or fermented drink, or simply *haltappanu*, or *tiyātu*, or *ši-ši*, in fermented drink.⁸ When the patient's internal organs burn and he is constipated, let him drink a medicine of garlic and cummin,⁹ or the pounded rind of green *il* (a plant) mixed with swine-fat.¹⁰ Remedies are prescribed when 'garlic, leeks, beef, pork, and beer are unretained by a man,' and 'in his belching the gall is withheld (?).'¹¹ For what the Assyrian doctor describes as 'the food being returned to the mouth' the head and breast were to be bound and certain drugs eaten in honey, mutton fat, or butter, while the patient was to be kept off certain food for three days, and was not allowed to wash.¹² For liver complaints, garlic was prescribed,¹³ or cassia drunk in beer, or large draughts of beer or 'wine-water.'¹⁴ In the case of jaundice, of which the symptoms are given fully, the physicians were not so hopeful of recovery; but some prescriptions seem to have been potent:

'When a man's body is yellow, his face is yellow and black, the root of his tongue black, *ahhazu* ('seizer') is its name; thou must bake great wild *mūsdimgurinna*, he shall drink it in fermented drink. Then will the *ahhazu* which is in him be silent.'¹⁵

In constipation, the patient drank a mixture of green garlic and *kukru*-rind in fermented drink, followed by dates in swine-fat or oil; or another prescription is cypress-cones pounded up and mixed with fermented drink. If, in addition to constipation, 'his inside is much inflamed,' the prescription is a decoction of *haltappanu*-plant, sweet reed, *ballukku*-plant, and cypress administered as an enema. An enema is also prescribed when a man is constipated after heavy eating and drinking, and his inside is 'angry.'¹⁶ In the case of drunkenness, the following remedy is given for the morning after:

¹ Kichler, *Beitr. zur Kenntnis der assyr.-bab. Medizin*, p. 1, ll. 2-3.

² Ib. p. 39, l. 44.

³ Ib. p. 5, l. 31.

⁴ Ib. l. 32.

⁵ Ib. p. 3, l. 13.

⁶ Ib. ll. 14-16. There are some other points in this prescription not yet intelligible.

⁷ Ib. l. 26 ff.

⁸ Ib. p. 5, l. 1 ff.

⁹ Ib. p. 23, ll. 17-18.

¹⁰ Ib. l. 19.

¹¹ Ib. p. 43, ll. 1-2.

¹² Ib. p. 25, ll. 36-38.

¹³ Ib. p. 43, l. 14.

¹⁴ Ib. p. 53, l. 70; 55, l. 71.

¹⁵ Ib. p. 61, ll. 26-27.

¹⁶ Ib. p. 7, ll. 10-11, 15-16, 17-20.

'When a man has drunk fermented drink and his head aches and he forgets his speech, and in speaking is incoherent, and his understanding is lost, and his eyes are fixed, bray (eleven plants) together and let him drink them in oil and fermented drink before the approach of Oula in the morning before dawn, before any one kisses him.'¹

Veneral diseases are prescribed for in various tablets;² the colour of the urine was also observed in diagnosis.³

It is curious to see how persistently the old beliefs survive among the Arabs of Mesopotamia of to-day. Toothache is still attributed to a worm, and the writer heard this story on good Mosul authority, that a man with toothache had only to fumigate his aching teeth with the smoke from dried *withanifera* (*solanaceae*), and the worm would drop out of his mouth. This is a belief not confined to the Arabs, occurring, as it does, among other peoples,⁴ and it certainly dates back to several centuries *s.c.*, for we find a Babylonian tablet describing the genesis of this tooth-worm:

'After Anu [had created the heaven],
The heavens created [the earth],
The earth created the rivers,
The rivers created the canals,
The canals created the marshes,
The marshes created the Worm.
The Worm came and wept before the Sun-god,
Before Ea came her plaint:
"What wilt thou give me to eat,
What wilt thou give me to gnaw?"
"I will give thee ripe figs,
And sweet-scented . . . wood."
"What are your ripe figs to me,
Or your sweet-scented . . . wood?
Let me drink amid the teeth,
And let me rest amid the gums(?),
Of the teeth will I suck the blood,
And destroy the strength(?) of their gums(?);
So shall I hold the bolt of the door."
"Since thou hast said this, O worm!
May Ea smite thee with the might of his fist."

The incantation prescribed for the toothache is:

'Thou shalt do this: Mix beer, *sakibbir*-plant, and oil together. Repeat the incantation three times thereon, and put in on the tooth.'⁵

Just in the same way as the tooth has a semi-medical, semi-magical incantation prescribed for it, so do we find similar texts for the heart and eyes. For some form of 'heart' medicine the following incantation is given:

'The heart-plant sprang up in Makaa, and the Moon-god [rooted it out and]
[Planted it in the mountains]; the Sun-god brought it down from the mountains, [and]
[Planted it in] the earth; its root filleth the earth, its horns stretch out to heaven.
[It seized on the heart of the Sun-god when] he . . . ; it seized on the heart of the Moon-god in the clouds,
It seized on the heart of the ox in the stall,
[It seized on the heart of the goat] in the fold,
It seized on the heart of the ass in the stable,
[It seized on the heart of the] dog in the kennel,
It seized on the heart of the pig in the sty,
[It seized on the heart of the] man in his pleasure,
It seized on the heart of the maid in her sleeping-chamber,
[It seized on the heart of N.], son of N. . . .'⁶

Magan or Makan is supposed to be the Sinaitic Peninsula, and it is there that the *Hyoscyamus muticus* grows. The Arabs call it the *sakrān* ('drunken'), from its intoxicating effect; it has long spikes very much like the fox-glove, only purple in colour, which may be compared with the 'horns' mentioned in the incantation. It seems quite possible that the Assyrians may have had a knowledge of its existence and properties; at any rate, the name 'heart-plant,' coupled with its provenance, Sinai, another description given of it, is suggestive.

In certain cases of ophthalmia, the prescription is carefully led up to by a description of the cause of the blindness:

'The eye of the man is sick, the eye of the woman is sick. The eye of man or woman is sick—who can heal (him)? Thou shalt send them to bring pure *KU-SA* of the date-palm; chew (*te-hi-pi*) it in thy mouth, twist (*te-pi-ti*) it in thy hand: thou shalt bind it on the temples of the man or woman, and the man or woman shall recover . . .'⁷

¹ Kichler, *loc. cit.* p. 33, l. 51 ff.

² *z.g.* Rm. ii. 312; cf. Rm. ii. 315.

³ S. 516.

⁴ Cf. Skeat, *Malay Magic*, p. 359.

⁵ See the writer's copy in *Cun. Texts from Bab. Tablets* 1903,

pt. xvii. pl. 50 (Thompson, *Devils*, ii. 160).

⁶ Kichler, *loc. cit.* p. 9.

'The wind blew in heaven and brought blindness (*sinme*) to the eye of the man: from the distast heavens it blew and brought blindness to the eye of the man; unto sick eyes it brought blindness. The eye of this man troubleth; his eye is hurt (?) (*a-sa-a*); this man weepeth for himself grievously. Nāru hath seen the sickness of this man, and (hath said), "Take pounded cassia, perform the incantation of the Deep, and bind up the eye of the sick man." When Nāru toucheth the eye of the man with her pure hand, may the wind which hath afflicted the eye of the man go forth from his eyes!'¹

Similarly, the sting of a scorpion is treated with an incantation against the poisonous creature, to be recited while anointing the hurt:

'Her horns stretch out like those of a wild bull,²
Her tail curls like that of a mighty lion,
Bēl hath made a house—when he maketh fast the enclosure,
When he breaketh the wall of Ispis-lazuli,
May the little finger of Bēl carry it off,
May it carry off the water . . . (i.e. collected by the inflammation!)'³

It is a little uncertain what the text actually means, but it seems as if the patient puts the scorpion in the model of a house, which Bēl is supposed to have made, and, after fastening the door, he takes it out with his little finger by a hole in the wall.

Another prescription for scorpion-sting is to mix in oil of cedar various substances that have been brayed up, and anoint the wound.⁴ For snake-bite the wounded man was to peel willow root and eat it, or drink a potion of *ŠI-ŠI* plant in fermented liquor.⁵

The 'Baghdad boil,' or 'Mosul button,' was apparently as troublesome in ancient times as it is to-day. A tablet exists in the British Museum, giving the omens for what follows from the 'button' appearing on certain parts of the body.⁶ A case of the boil appears to be referred to in an astrological report to the king of Assyria:

'Concerning this evil of the skin, the King, my lord, hath not spoken from his heart. The sickness lasts a year: people that are sick all recover.'⁷

The boil is popularly supposed to last for a year.

Prescriptions are found for diseases of all parts of the body: the tongue and lips⁸ (K. 9438), the nails and fingers (K. 10464), the hands and feet (K. 9156), or the neck (K. 3687); 'if a man's ears "sing"' (*isagguṃma*) (K. 9059); 'if a man's breast and *maš-kaṣi* hurt him' (K. 10726); 'when a man has palpitation (*širibit*) of the heart and his heart . . . (holds) fire (?)' (K. 8760). If a man's left side hurts him (*usammamsu*), then 'water and oil, heaven and earth—incantation, repeat seven times and

rub (*tumassu*), Arab. تَمَسَّسَ his left side, and repeat the

following incantation over his side and he will recover' (K. 8449). Two tablets (KK. 2413 and 11647) give rites and ceremonies for a woman during pregnancy. (On stones used for conception, see Oefeke, *ZA* xiv. 356, and compare the Hebrew 'stones of preservation' against miscarriage called אבן חַיִּים.) There is a long series called by its first line, 'When a man's brain holds fire,' in which the various symptoms are carefully described, such as neuralgia of the temples, blood-shot and weeping eyes, etc. (see the present writer's tr. in *AJS*, Oct. 1907). The following are specimens (Tablet ii. K. 2611, col. ii. l. 8 ff.; *Cun. Texts from Bab. Tablets*, 1906, vol. xxiii. p. 43). 'When a man's right temple hurts him and his right eye is swollen and weeps tears, it is the hand of a ghost or the hatred of a goddess against (or for) his life; mix *sibu* (tree), *arganu* (tree), *bariratu* (tree), one shekel of "river-foam," *dilbat* (plant, ginger (?) in ground meal, steep it in beer (and) bind on as a poultice.' Similarly, when the left temple and eye are afflicted (col. iii. l. 1), the physician must bray together dates from Dilmun, thyme, and cedar-sap in oil of *gir*, and apply them before the patient breaks his fast. If the patient, in addition to the neuralgia, vomits, and his eyes are inflamed, it is the 'hand of a ghost,' and the remedy is to calcine human bones and bray them, and then rub them on the place with oil of cedar (l. 5).

These instances might be multiplied, even from the texts

¹ *WAI* iv. 29*, 4, C. ii. 6 ff.

² The translation of the first line preceding this is uncertain. The last line, which has been omitted here, runs (according to the copy in Bezold's *Catalogue of the Kouyunjik Collection*), 'May he smite a great fist upon the man (?)!'

³ *Rm.* ii. 149.

⁴ K. 7845.

⁵ S. 1357.

⁶ Virolleaud, *Babyloniaca*, Paris, 1906, i. 91.

⁷ See the writer's *Reports of the Magicians and Astrologers*, Lond. 1900, no. 257.

⁸ Something equivalent to unilateral paralysis appears to be mentioned on the tablet *Rm.* ii. 143: 'When a man's lip *kuppul* to the right and he [cannot] speak.' *Kuppul* is perhaps to be referred to the Hebrew root *קָפַל*, 'to double.'

which are already published; but there are many tablets on this subject in the British Museum which still remain to be copied. When this is done, it will be possible to speak with less uncertainty about the methods employed by the Assyrian physicians.

Hitherto nothing has been found in the cuneiform texts to confirm the statement of Herodotus (i. 197) that the Babylonians were wont to bring sick folk into the market-place for the advice of any that might suggest a remedy. Both the magical and the medical series go far to show that the profession of medicine was well organized and systematic, although it may well have been that the poorer folk did what Herodotus relates; but, again, if any comparison can be made between ancient and modern Semites in this respect, the deformed, maim, halt, and blind were probably to be found in the *sūk* of every town begging alms of every passer-by, and this perhaps is what Herodotus saw. The profession of the doctor carried with it grave responsibilities, even as far back as the time of Hammurabi. One has only to read the list of fines to see that a surgeon was liable if he accidentally inflicted unnecessary damage on a patient in treating him.

The more human side of the healing art is shown in the cuneiform correspondence. Several letters from the physician Arad-Nanā relating to his patients are extant, dating from the 7th cent. B.C., and, inasmuch as he is writing to the king in every case, we may presume that he is the Court physician whom the king has in these instances allowed to visit certain of his staff. That this may well be so is shown by an astrological letter (No. 18 of the writer's *Reports of the Magicians and Astrologers*), which, in addition to giving the formal report, adds, 'Bēl-epuš, the Babylonian magician, is very ill; let the King command that a physician come and see him.' The following specimens will throw some light on the professional skill of Arad-Nanā (we append Johnston's translations, *JAOS* xviii. 162 ff., which are the best that can at present be made of a most difficult subject):

'To the King, my lord, thy servant, Arad-Nanā. A hearty greeting to the King, my lord! May Adar and Gula grant health of mind and body to the King, my lord! All goes well in regard to that poor fellow whose eyes are diseased. I had applied a dressing covering his face. Yesterday, towards evening, undoing the bandage which held it (in place), I removed the dressing. There was pus upon the dressing about the size of the tip of the little finger. If any of thy gods has put his hand to the matter, that (god) must surely have given express commands. All is well. Let the heart of my lord the king be of good cheer! Within seven or eight days he will be well' (S. 1064; see Harper, *Assyr. and Bab. Letters*, Lond. 1909, no. 392).

Similarly in K. 519: 'With regard to the patient who has a bleeding from his nose, the *Rab-MUGI* reports: "Yesterday, towards evening, there was much hemorrhage." These dressings are not scientifically applied. They are placed upon the side of the nose, oppress the nose, and come off when there is hemorrhage. Let them be placed within the nostrils, and then the air will be kept away, and the hemorrhage restrained. If it is agreeable to my lord, the King, I will go to-morrow and give instructions; (in the meantime) let me hear how he does' (Harper, no. 108).

As an example of death from a wound, an incident related in a late Bab. letter (c. 400 [?] B.C.) is worth quoting, although the translation of some of the words is not certain.

' . . . In a brawl (?) I heard that [So-and-so, whom] the noble (?) smote, when he was smitten fell sick of a suppuration (?). He did not understand it, (and) it enlarged and spread, so that he died therefrom.'¹

It is clear, therefore, from the texts which we possess, that Assyrian medicine was worthy of being held in high repute, and, although its trend towards magic detracts much from its science, it was probably a worthy forerunner of the methods in vogue during the Middle Ages.

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¹ See the present writer's *Late Babylonian Letters*, Lond. 1906, no. 114.

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DISEASE AND MEDICINE (Celtic).—The classic authority is the statement of Cæsar in his *Gallie War*. The terror of disease, and the art and science of healing, came within the sphere of religion among the Celts. The nation was religious: 'Natie est omnis Gallorum admodum dedita religionibus.' All matters connected with religion were submitted to the judgment of the Druids. They were the 'medicine-men' as well as the teachers and the priests of the Celts: 'atque ob eam causam, qui sunt affecti gravioribus morbis . . . aut pro victimis homines immolant, aut se immolatos vovent, administrisque ad ea sacrificia Druidibus utuntur.' The principle of life for life was recognized (cf. art. BLOOD-FEUD [Celtic], vol. ii. p. 725): 'quod, pro vita hominis nisi hominis vita reddatur, non posse aliter Deorum immortalium numen placari arbitrantur' (*de Bell. Gall.* vi. 16).

1. Gods of medicine.—The God of healing is identified by Cæsar with Apollo, who held the place of honour next to Mercury: 'post hunc, Apollinem et Martem et Jovem et Minervam. De his eandem fere, quam reliquæ gentes, habent opinionem: Apollinem morbos depellere . . .' (*ib.* vi. 17). The Druidic doctrine of immortality emphasized the value of life and health, and gave Apollo at this period a higher position than Mars.

'regit idem spiritus artus

Orbe alio; longæ (canitis si cognita) vitæ

Mors media est' (Lucan. *Phars.* i. 456 ff.).

Several Celtic deities of healing have been identified with Apollo. One appears as a presiding deity of healing springs and health resorts. The name occurs sometimes on inscriptions as *Borvo*: 'Deo Apollini Borvoni et Damona' (at Bourbonnelles-Bains in the Haute-Marne). Other forms are *Bormo*, in Central France, *Bormanus* in Provence, *Bormanicus* in Spain. This deity is associated sometimes with *Damona*, as at Bourbonnelles-Bains and Bourbon-Lancy in Saône-et-Loire; sometimes with *Bormana*, as at Aix-en-Diois in the Drôme. The word is akin to the Welsh *berwi*, 'boil,' and has reference to the hot springs (Rhys, *Celtic Heathendom*, p. 25 f.; Anwyl, *Celtic Religion*, p. 40).

Another deity was *Grannos*. In an inscription at Horberg in the Haut-Rhin, he is called 'Apollo Grannos Mogounos.' The name Grannos has been connected with the Skr. word *ghar*, 'glow,' 'burn,' 'shine.' It is considered equivalent to the 'Posphorus' of the Dacian inscription: 'Deus Bonus Puer Posphorus Apollo Pythius.' Apollo, the dispenser of light and warmth, was regarded as the repeller of disease. The name is associated with several hot springs. The old name of Aix-la-Chapelle, or Aachen, was *Aque Granni*. Inscriptions to him have been found at Graux in the Vosges and at Granheim near Mengen in Württemberg. The stream which receives the hot waters of Plombières in the Vosges is called *Eaux Grannes*. Grannos was identified with Asklepios and Serapis by Caracalla (Dio Cassius, lxxvii. 15). The other name Mogounos in the Horberg inscription appears in the old name of Mainz, *Moguntiacum*. The word Mogounos points to the *bonus puer* of the Dacian inscription (Rhys, *op. cit.* p. 22).

The name *Maponos* occurs in inscriptions in the

north of England. The Armthwaite inscription reads: 'Deo Maponi' (*Mon. Hist. Brit. Inscr.* 121). It is the old Welsh *mapon*, now *mabon*, 'boy' or 'male child.' The name is therefore identical in meaning with the *bonus puer* of the Dacian inscription from Carlsburg in Transylvania. The witness to the Celtic god of healing stretches across Europe along the line of the Celtic advance (Rhys, p. 21). The memory of Grannos is still preserved in the Auvergne at the Festival of the Brands on the first Sunday in Lent. Fires are lighted in every village. The ceremony of the Grannasmias takes place after a dance round the fire. A torch of straw called *granno-mio* is lighted at the fire, and carried round the orchards. The old Gaulish deity, in his aspect as the sun-god, is invoked with song:

'Granno, mo mio!

Granno, mon povere!

Granno, mo mouère!

('Granno, my friend . . . my father . . . my mother!'). It is considered by Pommerol to be a survival of solar worship, and the rite illustrates Rhys's derivation of the name (*Antiquary*, xxxviii. [1902] 80).

An altar found near Annecy is dedicated to a deity *Virotutes* or *Virotus*: 'Apollini Virotuti.' Rhys tentatively suggests that the word may be compounded of a Gaulish equivalent for *vir* and *tutor*, and may mean 'man-healing' or 'man-protecting' (*op. cit.* p. 21).

A bas-relief at Munich represents Apollo Grannos associated with *Sirona*. *Sirona* is connected with the Irish *sir*, 'long.' The two deities represent the ever young sun-god and the old goddess, and may be compared with Apollo and his mother Leto in Greek mythology. The hero Mahon mab Modron of the story of Kulhwch and Olwen is probably the same deity, Maponos. Mahon and Modron are suspected of being the exact equivalents of Grannos and *Sirona* (Rhys, p. 29). An inscription from Wiesbaden reads: 'Apollini Toutiorigi.' The name Toutiorix means 'king of the people,' and expresses the same thought as the title *ἀρχηγέτης* given to Apollo as 'leader,' in Greek mythology. The name appears transmuted and transformed in Theodoric, and the mythical legends associated with Dietrich of Bern belong more to Toutiorix than to the historical Theodoric the Ostrogoth (Rhys, p. 30).

The *Brigit triad* in Irish mythology holds a place of honour among the Celtic gods of medicine. The Irish god, the Dagda, had three daughters—Brigit, the poetess and seer, worshipped by the poets of ancient Erin; Brigit, the patroness of healing; and Brigit, the patroness of smiths. This points to a Goidelic goddess, Brigit, who corresponded to the Minerva of whom Cæsar says, 'Minervam operum atque artificiorum initia tradere' (*op. cit.* vi. 17). She has also been identified with the *Brigantia* of the inscriptions, from whom the Brigantes took their name (Rhys, p. 74). Brigit has also the attributes of the ancient goddess of fire (Whitley Stokes, *Mart. of Oengus*, p. 1). The hymns in honour of St. Brigit and the legends attaching to her name suggest that she has stepped into the place occupied by the Brigit of Irish mythology. In the hymn *Brigit be bithmaith*, she is addressed as 'flame golden, sparkling' (line 2), and asked to guard against disease: 'May she win for us battles over every disease!' (Irish *Liber Hymnorum*, H. Bradshaw Soc., 1897, ii. 39). In the story of the visit of the three disciples of Brigit to Blasantia (Piacenza), they are preserved from the effects of a drink of poisoned ale by reciting this hymn (*ib.* ii. 37). The story illustrates not only the healing craft of Brigit, but the memory of her ancient fame among the Celts of Italy. It is perhaps due to the same tradition of

Celtic heathenism that as late as the middle of the 18th cent. human blood was considered in Italy to be a cure for apoplexy (*Antiquary*, xxxviii. 205).

The 'cauldron of renovation' is represented as a talisman of healing in the Welsh story of Branwen, the daughter of Llyr: 'The Irish kindled a fire under the cauldron of renovation, and they cast the dead bodies into the cauldron until it was full, and the next day they came forth fighting-men as good as before, except that they were not able to speak' (*Mabinogion*, ed. A. Nutt, p. 39). This cauldron of regeneration had been brought up out of a lake in Ireland and given to Bran, son of Llyr (*ib.* p. 31). It is equivalent to the cauldron of the Dagda in Irish legend, one of the treasures of the Tuatha Dé Danann. It was called the 'undry' cauldron, for it was never empty (Rhys, p. 256 f.). It was brought from the mythical Murias, some place beneath the sea. The fire beneath the cauldron was fed by nine maidens (*ib.* p. 373). In the Taliessin verses of the *Mabinogion* it is represented as the cauldron of sciences, from which Gwion received three drops. It is with this cauldron that Caridwen was associated (*Mabinog.* pp. 295, 307). In the early tales underlying the Quest of the Holy Grail the healing qualities of the Grail or Cauldron rather than its gift of fertility may have been emphasized (A. Nutt, *Studies in the Legend of the Holy Grail*, London, 1888, p. 57).

2. Diseases and their cure.—Among the diseases which have left a lasting impression on Celtic tradition is the *buidechar*, 'yellow plague.' It is probable that it was the occasion of the composition of the *Lorica* of Gildas:

'ut non secum trahat me mortalitas
hujus anni neque mundi vanitas.'

The first outbreak of this disease was in 547 (Irish *Lib. Hymn.* i. 206, ii. 243). Ireland was especially subject to it in the 7th century. The hymn *Sen Dé* of Colman was written against it. 'Colman mac Uí Cluasaig, a scholar from Cork, made this hymn to save himself from the Yellow Plague' (*ib.* ii. 12). Gillies (*Gaelic Names of Diseases*, pp. 10, 23) states that he is unable to identify it. It could scarcely be yellow fever: 'probably it was typhoid, or perhaps typhus under its known aspect of bilious fever.'

Much of the folk-lore of disease may be traced back to the magic and medicine of Celtic heathendom. The healing powers of the *ash-tree*, whether the true ash or the mountain ash, are to be attributed to its association with ancient Celtic and Norse deities. In a Leicestershire wart-charm it is addressed:

'Ashen-tree, Ashen-tree,
Pray give these warts of me.'

The 'shrew-ash' in Richmond Park recalls an old cure for lameness and cramp in cattle by boring a hole and enclosing a live shrew-mouse in the tree. In this there is an echo of the ancient magic of exchange or transference of disease. In the case of the wart-charm, a pin is stuck in the tree, then in the wart, finally in the tree again (*Antiquary*, xlii. [1906] 423). A curious example of the practice of exchange of disease occurs in the *Martyrology of Oengus*:

'Fursa once happened to visit Maignenn o' Kilmainham, and they make their union and exchange their troubles in token of their union, to wit, the headache or piles from which Fursa suffered to be on Maignenn, and the reptile that was in Maignenn to enter Fursa' (*Mart. Oeng.*, ed. Whitley Stokes, p. 45).

The first of August was dedicated to Lug, the Sun-hero. This festival, known in Wales as *Gwyl Awst*, was transferred in Brecknockshire to the first Sunday in August. Early in the morning a visit was paid to the Little Van Lake in the Beacons, to greet the expected appearance of the Lady of the Lake. She has been regarded as a goddess of the dawn, who returned at times to

converse with her children. The eldest of them was named Rhiwallon, and had been instructed by her in the virtues of herbs. He was the founder of a family of physicians in South Wales. The physicians of Myddvai, as they were called, were attached to the house of Dynevor. Their ancestor was of mythical descent, and may be identified in the *Triads* with Rhiwallon of the broom (yellow) hair. He was thus invested with a solar character (Rhys, p. 423).

Folk-medicine consists partly in charms, partly in superstition, partly in a real knowledge of herbs. It rests ultimately on the religious ideas of Celtic heathenism. Witchcraft and medicine were different aspects of Celtic priestcraft in its better sense. The priests, if they were the sorcerers and wizards of their people, were their healers also.

Among the plants and herbs associated with Celtic medicine, the *mistletoe* takes the first rank. It was the sacred bough of the Druids, the gift of the Divine oak-tree, the gift of the Celtic Zeus himself. The Celtic Zeus was 'the Blazer of the mountain-top,' and the great stone-circles mark the sites sacred to him. A story of the Irish hero Diarmaid makes mention of the tree, the well, the pillar-stone, and the stone-circle consecrated to the Celtic Zeus.

'He saw, right before him, a great tree laden with fruit. . . . It was surrounded at a little distance by a circle of pillar-stones; and one stone, taller than the others, stood in the centre near the tree. Beside this pillar-stone was a spring-well, with a large round pool as clear as crystal' (Rhys, p. 188).

These sanctuaries in ancient days were places of healing, as well as places of worship. In the *Tripartite Life* of St. Patrick the idol of Cenn Cruaich, covered with gold and silver, was surrounded by a circle of twelve other idols, covered with brass. Even in the 7th cent. these had nearly disappeared. They represent the primitive pagan sanctuary of the Goidels. The name *Cenn Cruaich*, 'Head or Chief of the Mound,' when transmuted from Goidelic to Brythonic, re-appears in the old place-name *Penmoerucium* on the Watling Street. The site is at Stretton, not far from its modern representative Penkridge in Staffordshire (Rhys, p. 203; *North Staff. Field Club Transactions*, vol. xlii. pp. 116-118).

The mistletoe, the gift of the Celtic Zeus, was the all-healer (*olliach*: 'omnia sanans' [Pliny, *HN* xvi. 95]). It was cut at a New Year Festival with peculiar ceremony—a priest in white, a golden sickle, two white oxen. The oxen were sacrificed, the sacrificial meal followed. The mistletoe had great life-giving powers. It healed unfruitfulness in man and beast, and was a protection against poison' (Grupp, *Kultur der alt. Kelten u. Germanen*, p. 149).

Another plant mentioned by Pliny is the *Selago*, which has been identified with the Savin-tree, a species of juniper, and with the club-moss. It had to be plucked stealthily. Bread and wine were offered, and the priest with bare feet and white robe drew near, and, putting his right hand through the left fold of his tunic, gathered it without using a knife. Like the mistletoe, it was then placed on a white cloth. For healing purposes the plant was burnt, and the fumes were regarded as beneficial for the eye (Grupp, *op. cit.* p. 150).

A similar ceremony was followed at the gathering of the *samolus*, whether the brook-weed (*Samolus valerandi*) or the watercress. It was gathered fasting, with the left hand, and with averted face. The *centaury* was also used as a cure (Grupp, p. 151). The *St. John's wort* and other plants were burnt or hung over the door to keep off disease. The *St. John's wort* (*Hypericum perforatum*) is known as *chasse-diable*.

Inscriptions and folk-lore have preserved the traditions of the gods of healing and the healing craft among the Celts.

The deities honoured in different localities would have their own peculiar rites, their own special gifts. Juvavius was a deity who gave his name to Salzburg. Alannus also occurs in certain place-names. Some of the goddesses had healing power. Stanna was the companion of Apollo Stannus. Minerva Belisama and Sulevia were associated with Apollo Belenus. Alaupa was the consort of Alannus (Grupp, pp. 159-162). There is still much to do in grouping together the facts preserved in the folk-lore of herbs and healing, with a view to learning more of the ancient cult of the local gods of medicine.

The folk-lore of Ireland is rich in its memories of old-time medicine. Diancecht, a member of the Tuatha Dé Danann, may almost be regarded as the Irish god of medicine (cf. CELTS, iii. 285a). A magic cauldron of renovation was ascribed to him. The methods of the Irish witch-doctors still form part of the home medicine in country districts today. Snails pounded in salt were prescribed as a dressing in an Irish MS of 1450. They were still used for that purpose in Staffordshire at the close of the 19th century. Urine was in common use for eye-disease and jaundice; *dung* was prescribed by Wesley in his *Primitive Physic*. In Ireland, as in England, these remedies were administered, to the recitation of certain charms (Wood-Martin, *Elder Faiths*, London, 1902, ii. 160-205). The *rag-offerings* tied to trees and bushes in the immediate neighbourhood of holy wells are still met with in many parts of Ireland, especially in the west. They are thought by some to have a reference to the transference of disease to the tree-spirit (*ib.* ii. 84). Saliva was also in use as a salve. A part of the cure of epilepsy in 1450 was the *burying of a young cock alive* (*ib.* 188).

A more normal system of healing is traceable in the Irish *sweat-houses*, which were in use as a hot-air cure until the 19th century. These sweat-houses were generally of the beehive shape, covered with clay, with a low entrance. They were heated with turfs, like a brick-oven, and the patient was shut in for a given time. The bath was followed by a plunge in a pool or stream near by. This was the usual cure for rheumatism.

A custom clearly connected with medicine among the Irish was the *covade*. On the birth of a child, the father was obliged to take to his bed and submit to a vicarious process of nursing at the hands of the doctor and nurse. The custom was widely spread throughout the world in primitive times, especially among races where kinship was reckoned through the mother. At the same time it is a custom which witnesses to the responsibility of fatherhood even under conditions which exalt the privilege of motherhood (Wood-Martin, *op. cit.* ii. 40). See art. BIRTH (Introduction), vol. ii. p. 635.

In the legendary history of the invasion of Ulster by the Fir Bolg, the adult males were *en covade* and unable to defend the kingdom of Conchobar against the enemy. The defence was made in heroic manner by Cúchulainn and his father only. Rhys (p. 622) refers to this incident as the 'distress of the gods and the sun-hero's aid.' Cf. art. CÚCHULAINN CYCLE.

The Ultonian *covade* lasted five nights and four days, in accordance with the use of the number 'nine' in the reckoning of time among the Celts. It was called *cess noinden Ulad*, 'the Ulster men's sickness or indisposition of a week' (*ib.* p. 363). There is a significant correspondence between the Ultonian *covade* and the Phrygian idea of the hibernating of the gods. Rhys would place the origin of Aryan myth within the Arctic circle. He sees in the labours of Cúchulainn the sun-hero a mythical witness to the period during which the sun in the ancient home of the Aryans remained above the horizon (*ib.* p. 633). Would not the *covade*, or 'distress of the gods,' be a trace of the short period during which the sun remained wholly below the horizon, the period mythically preceding its re-birth and re-appearance in the heavens? The Ultonian *covade* does not explain the origin of the custom, but only the application of a primitive usage to the explanation of the annual birth of the sun-god just within the Arctic circle.

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DISEASE AND MEDICINE (Egyptian).—1. From the diagnostics of the Egyptian papyri we can distinguish—even identify, in many cases—about 250 different kinds of diseases, and the Ebers Papyrus alone describes 170 varieties. Many of them are the common ills of all humanity, and we cannot even say that they were of more frequent occurrence in the Valley of the Nile than elsewhere: complaints of the stomach, the bowels, the bladder, the respiratory organs, the head, the sinuses of the face, inflammation of the teeth, headache, coryza, ordinary fever, varices, epilepsy, and nervous ailments. Other diseases seem, by comparison with modern Egypt, to have been specially prevalent,—asthma, angina pectoris, anæmia, hæmaturia,—but it cannot be decided whether the chief cause of this is the race or the country. Some are certainly connected with hygiene (or rather its absence), with feeding, and with habits. Skin diseases, smallpox (cf. Elliot Smith's investigations of the mummies in *Annales du service des antiquités de l'Égypte*, Paris, 1900 ff., and *Bulletin de l'institut égyptien*, Alexandria, 1862 ff., *passim*; and Maspero, *Momies royales*, Paris, 1886, p. 532), the infinite variety of parasitic diseases, e.g. 'Arabian elephantiasis' (=the 'crocodile disease' of the ancients), worms, and *pyorrhœa alveolaris* are the several consequences of these in varying degrees. In the same way, it was to the manners and customs that the Egyptian woman owed her long list of infirmities as described in the Egyptian treatises from the XIIth dynasty—flux, menstruation, metritis, dysmenorrhœa, erosions, pustules, prolapsus of the vulva, and cancerous tumours. It was, finally, the combined operations of Nature—water, winds, climate—and of the Egyptian's negligence that produced the terrible frequency of ulcers, Nile boils, carbuncles on the breast and legs, and especially the appalling array of eye-troubles, among which are seen all the varieties known at this day: stytes, specks, ectropion, blepharitis, leucoma, lippitude, hydropthalmia, staphyloma, conjunctivitis, purulent ophthalmia, and many more. Such lists as these do not prove the unhealthiness of a country, but rather show the degree to which the knowledge of classical Egypt had advanced in diagnostics and therapeutics; and the close resemblance between ancient and modern Egypt in this respect justifies the conclusion, in agreement with Herodotus (ii. 77) and against Pliny (xxvi. 1), that the Nile Valley was a very healthy country, where the length of life, in spite of the opinion of Chabas ('Prétendue longévité des Égyptiens,' in *Bibl. égyptol.* ii. [1905] 181), was probably in excess of that of the average man of the present day; where the general health was much better than in Greece or Italy, for example; and where, as a rule, the great scourges that so often laid waste the rest of the ancient world—endemic diseases such as malaria—were unknown.

A classification of man's ills so minute leads, even at first sight, to the postulation of ideas already far removed from 'primitive savagery.' This impression is confirmed by the fact that neither the mythology of classical Egypt nor its theologies attribute any special disease to any definite gods. We seem to see in the whole the mark of a considerable scientific and moral advance on the rest of contemporary society. If, however, the pure therapeutics of Egypt witnesses to a relative but very real perfection, on the other hand the Egyptian ideas on the causes and nature of disease exhibit conceptions, even in the historical period, much more akin than one would at first believe to those of 'non-civilized' peoples. At the same time we find that, owing to the special conditions under which Egyptian civilization was formed, this per-

sistent characteristic of the early ages has produced on the rôles of gods, kings, and priests in this connexion systematic views that are capable of finally reaching lofty and noble conceptions.

2. We read in Clement (*ap. Orig.* viii. 41) that, when any part of the body was sick, the demon to which that member belonged was invoked. In a somewhat imperfect form this explains the traditional view of the Egyptian on the nature of disease. It was always regarded as the work of demons, spirits, *jinn*, ghouls, vampires, or spirits of the dead (see DEMONS AND SPIRITS [Egyp.]). They insinuated themselves into the individual by the nostrils, mouth, or ears, and devoured the vital substance. The means by which they surprise man, their constant efforts to do so as they prowl around him unceasingly, and the manner in which they perform their destruction inside his body offer no special interest for the history of religion, though the numerous formal texts describing these peculiarities may interest the specialist in Egyptological science. Compared with other human civilizations the notions on this subject are essentially the same as we find in classical religions, such as the Chaldaeo-Assyrian (cf., e.g., *PSBA* xxviii. [1907] 81), or among modern savages all over the world.

The idea that the power of spirits—the causes of disease—increases peculiarly at certain hours of the day, and particularly at certain seasons of the year, is shown by the papyrus of lucky and unlucky days; and, if this idea is found equally among numerous non-civilized and semi-civilized races, and is the product, in Egypt as elsewhere, of experimental pseudo-observation, yet Egyptian astrology has greatly strengthened the initial data by explaining this periodical virulence by fixed rules, based on the influences of dates of the calendar (*q.v.*) and on mythological history. On such days 'numerous harmful germs permeate the clothing,' because the struggle neutralizes the power of the good gods, who are too busy to protect man, or because great evil influences are seen to be re-commencing in this world.

On 19th Tobī and 5th Pashus, the germs 'penetrate the clothing'; then 'infection steps in and causes death.' On 17th Tobī, the anniversary of great cataclysms, any sexual intercourse predisposes to being 'devoured by infection.'¹ Those born on 4th Paophi are liable to death by 'marsh' fever. The 14th of Athyr is dangerous because it is the anniversary of the 'leion' of the 'majesty of this god.' This last peculiarity is important to observe. Since disease was the result of the attack of a 'spirit' (or of a demon or the dead), it was of the same type for every one, and every one was exposed to it.

The veterinary papyri show that Egyptian thought conceived of animals' diseases as due to the same causes as those of men, and the same mixture of medical and magical practices was applied to both, just as the same collection of writings might contain both the art of curing men and that of curing beasts.

The question as to whether the dead suffer illness is difficult to settle. They certainly suffer hunger and thirst—which were regarded by the Egyptians as things existing *by themselves* and due to harmful spirits. They could die 'the second death,' which logically supposes the possibility of attacks of illness. Finally, the precautions taken that the dead may remain in good health (*udzai*) in the other world assume the contrary possibility of illness. We have, however, no decisive texts on this point. It is probably reasonable to hold that the Egyptian dead were believed to be exposed, in certain conditions, to the same dangers of spirit-attacks as the living.

What held true of animals and men also held of the rest of the world, and therefore of the gods; we know of a great number of cases where their constitution, which did not differ in qualities or in nature from that of other beings, suffered various ills, and had to submit to the intrusion of 'evil spirits.' Epigraphic texts and papyri have left us definite evidence. Every one knows how Rā

¹ On the dangers and harm resulting from connexion with women in the various religions, magical, etc., acts of Egyptian life, see art. *Μαοιο* (Egyp.).

had to die because a serpent bit his heel; Isis suffered from a mammary phlegmon after the birth of Shu and Tefnut; Horus was stung by a scorpion, had dysentery (London Papyrus), and an anal weakness (see Oefele, *Vorhippokratische Medizin*, 64). The sky-god himself saw his eyes, the Sun and Moon, affected by sudden diseases, attributed to the attacks of evil spirits, and this was one of the numerous ways in which eclipses were explained.

Even eliminating the cases of doubtful authenticity, the official religion recognized positively that the national gods were not exempt from disease. The medical literature of the temples preserves the deposit of prescriptions used in such and such a case of indisposition by ailing gods. A remedy of this kind had been composed 'by the invalid Rā' (Ebers Papyrus, xlv.), and there were remedies to cure fever 'in gods and men.' There was nothing, essentially, to protect the highest beings from the ills common to all. But here, as elsewhere, their quality of godhead was derived from their superior ability to concentrate their energies (see DEMONS [Egyp.]), and to contrive defences which made them triumph in the struggle. They were able to find or compose prescriptions and formulæ which, in the special case of disease, brought them out of their trouble. The revelation of the secrets of their art or magic, granted only to those men who were their heirs or ministers, is the very foundation of Egyptian medicine. It unfolds at once its characteristics, its history, and, above all, the gradual formation of its knowledge.

The warfare against disease, taught by the gods (or stolen from them), proceeded of necessity and above all from magic (gaining support gradually from medicine properly so called), since it started originally with exorcism. It is accompanied, therefore, by spells and incantations, with all their accessories, such as fumigation, aspersions, imperative gestures, etc. The knowledge of secret names at first played its usual part, and the doctor of ancient Egypt was a magician-priest, entering upon a struggle with an adversary—to discover the name of the demon causing the illness, to find by secret knowledge the name of a god who had helped in a fight against the same demon in a similar case, and to force the demon to flee. This he accomplished either by disguising himself as the conquering god and imitating his actions, or by summoning this god to his aid, or by employing the relics, talismans, and means of defence which the latter had invented. (These three methods probably constitute three successive phases in the original history of primitive Egyptian therapeutics.) As usual, 'alliteration,' or play on the sound of the words spoken, had its share in all this.

Take a case of the momentary loss of sight, e.g., which was cured by adjuring the crocodile; not only did people think that the same remedy which had saved the eye of the heavens (=the sun), when the crocodile tried to devour it, would also save man, and therefore use the same formula; but at the same time they made a play of words on *shu*, 'blind,' and *shu*, the ostrich-feather held by the operator while making the disease return to the crocodile supposed to have sent it.

The belief that the forces and armies of good and evil beings were grouped, like the astral forces, in the four regions of the world produced the further practice of a fourfold pronouncement of the formulæ of spells and exorcisms preceding or accompanying the giving of the material medicine (e.g. Ebers Papyrus, ch. 108). Therapeutics was, therefore, at this stage an operation by which the gods were subjugated by the various processes of magic, 'contagious' or mimetic.

The fundamental nature of this original art of healing was a mark of the Egyptian's struggle against disease right down to his last days. In

spite of all the gradual attenuation of magic in favour of pharmaceutical and actually experimental science, therapeutics remained closely bound to Divine influences, both in its staff of officials and in the composition of its didactic treatises. The remedy proper never entirely supplanted the ritualistic and conjuratory part of the process.

The pharmacopœia proper also suffered this general influence. A great proportion of the substances owed their supposed virtues to the magical powers of the beings or things from which they sprang, or to their supposed mythological connexion with a certain god or spirit. The pharmacopœia of curative and harmful plants is related, in origin at least, and often to the very end, to the theory of 'spirits' causing and protecting from diseases; and the Egyptian ideas on this point are found faithfully represented in the list of thirty-six magical plants of Pamphilus (*de Simplicium medic. facultatibus*). Finally, it is natural that the magical virtues of certain objects against disease have perpetuated, in Egypt as elsewhere and for the same reasons, the use of amulets (cf. CHARMS AND AMULETS [Egyp.]).

3. For the understanding of Egyptian ideas on disease and the methods of conjuring it, it is essential to study the formation of the books relating to it. The gods having known better than any other beings how to organize a defence, it was their ministers (or their possessors) who had the exclusive monopoly of magico-medical cures, revealed as these were by the gods or seized from their secret powers. The original fetish-doctors, then, had as their inevitable successors priest-doctors; and the growth of knowledge was, above all, a mechanical growth, by the union into collective classes, of the 'arts and mysteries' at first scattered over as many sanctuaries as there were originally independent gods. The primitive connexion between the spirits of gods and protection against disease was likewise the cause of the particular manner in which the books relating to diseases and their cure were composed, and of their double character, in the historic period, of traditional compositions and compilations pure and simple, innocent of all attempts to make a harmonious general whole on a rational plan. Further, there is nothing more opposed to an understanding of them and to the exegetical method than to maintain (like Erman, *e.g.* in his *Religion* [Fr. ed., 1907, p. 226]) that the attribution of such and such a chapter of prescriptions to a certain god or fabulous king is an artifice of the editor and indicates a late date. The observation of diseases and the supposed knowledge of the names or forces to be adjured or driven off were the fruit of experience and of magical prescriptions acquired from the very earliest days of Egypt by its pre-historic 'fetishists'; and the final tradition which in the Græco-Roman period attributed to Hermes Trismegistus (Clement, *Strom.* vi. 4) the composition of six books of medicine (on the forty-two hermetical books) reproduced exactly the belief of classic Egypt in its last stages, representing Thoth as the god who invented the formulæ necessary for giving remedies their power against diseases (cf. Pietschmann, *Hermes Trismegistos*, Leipzig, 1875, pp. 20-45 ff.).

The sacred library of the proto-historic Egyptian temple became the depository of the lists of diseases and their cures, and the evidence of historical times in this regard is fully in accord with the reality of the facts, when it speaks of the library that was at Heliopolis, 'the hall of rolls,' and the prescriptions found in the temple of Ptah at Memphis (cf. Wilkinson, *Manners and Customs*, 1878, ii. 355, 358), or when the inscriptions of the

'library' of the temple of Edfu mention the presence of books there 'for turning aside the cause of disease' (cf. Mallet, *Kasr el Agouz*, Cairo, 1909, p. 24).

The gradual formation of medical treatises properly so called came about in the same way as that of the various compositions forming the annals of the sacerdotal calendar in Egypt, its tales of feasts (see FESTIVALS [Egyp.]), its Books of the Dead, and its 'books' of the different sciences. The important sanctuaries gathered together small local collections, and later on made exchanges with each other of the collections thus obtained. They usually proceeded by simple juxtaposition. To the body of information relating to a certain disease generations gradually joined on the ancient prescriptions of different provincial 'wisdom,' and grouped around a book of eye-diseases, internal complaints, and ulcers all the cures and all the diagnostics—often contradicting each other—obtained by these combinations. The part of the body or the disease stated in the title of the work, having served as the basis for the work of compilation, did duty also as a 'rallying sign' for all works on any analogous subject, without distinction of date or origin. This is the explanation of the common sections that are found in papyrus after papyrus—parts common to the Leipzig Papyrus and those of London and Berlin, or to the latter and the Reisner Papyrus of California, and so on. Those common parts show the common origin of our papyri, and their character of compilations from much older writings. The manner in which the very scanty remains of the Fifteenth dynasty treatises were composed shows that these processes of compilation, so evident in the XIXth dynasty papyri, had been employed long before. And this fact, in conjunction with a study of grammar and language, leads us to conclude that the Egyptians were stating an absolutely historical truth when they attributed the additions of these great works on diseases to the Memphite kings or to the first legendary dynasties of the Thinites. As leading priest in his kingdom, the king was naturally versed in the magico-medical art of healing, and this was formally said of the most ancient kings; *ἱατρός γάρ ἦν*, said Manetho (*apud* Africanus) of Athotis. Such an attribution to the Pharaohs of a charge to maintain the health of their subjects agreed in every point with their nature as sons of gods, and with their function, which was, above everything, to continue and maintain the work of the good gods, the founders of Egypt (*ἱατρικὴν τε ἐξέσκησεν καὶ βίβλους ἀνατομικαὶς συνέγραψε* [Manetho, *apud* Eusebius]).

Being logically devoted to everything that was very ancient and so brought him a little nearer to the Divine origin of all that is good on earth, the Egyptian made scarcely any change in the basis or the form of the knowledge thus obtained; he was always eager to show how the new recension of one of these 'ancient books of knowledge beneficial to man' was attached to the origins of national history. And, indeed, criticism has proved that the Theban manuscripts proceed directly from the proto-Theban, and the proto-Theban from still earlier types. The books that had grown too old materially were piously copied. In the actual body of texts relating to a certain disease, the work of generations consisted in inserting glosses, in slightly retouching, or in supporting the efficacy of a certain formula by extolling in the margin its proved excellence (Ebers Papyrus, lxi. 17, xxxv. 18; and Reisner Papyrus, *passim*), or by telling how it had once cured such and such a mighty personage, prince or king (Ebers Papyrus, lxiv. 4, lxvi. 15). The re-copying or re-modelling of several ancient versions in circulation led the scribe to note the variants in the texts used in composing the new edition, or to insert—rather unskillfully and such as they were—the scholia of his predecessors (cf. the excellent, and unfortunately still unique, work on the Ebers Papyrus considered from this point of view, by Schäfer, *Commentationes de Papyro Medicinali Leipsiensis*, Berlin, 1892). The most serious material changes, then, were not in the idea held of disease, or in the manner of defining or conjuring it, but in the increasing of the means combined for this last purpose. This happened very rarely by the invention of new remedies, but usually, and much more mechanically, by joining to the old writings new treatises from other localities, but equally ancient. These were dismembered, and their substance was joined on according to the diseases enumerated. A work, *e.g.*, devoted to 'abscesses on all the members' became the nucleus round which gathered

everything that could be found in the various temples of the nature of formulæ relating to abscesses. Thus it happened that there were sometimes a dozen methods of curing one disease, and sometimes contradictory methods—e.g. there occurred side by side, in the same compilation, an explanation of diseases based on an anatomy in which the human body possesses twelve great blood-vessels, and another founded on the assumption that it has forty. It was not, then, that the number of remedies actually increased in Egypt throughout the ages; there was rather the diffusion among a greater number of Egyptians of one and the same material which had formerly been embodied in a multitude of petty provincial theories. A general invocation at the end to the god of the place of compilation was enough, in the compiler's opinion, to guarantee a sort of unity to the work composed in this way.

The whole result was, as we may see, far from equal to a treatise of synthetic—not to mention philosophic—character on disease or diseases. It would nevertheless be inaccurate and unfair to see in such works (as does Pierret, *Dict. d'arch. égypt.*, Paris, 1875) nothing but a collection of pharmaceutical prescriptions.

4. Religious and traditional bases so solid and so closely bound up with national beliefs and institutions have necessarily supported a structure whose characteristic lines have remained almost intact throughout the whole existence of Egypt. The science of disease was marked, to the very end of Egyptian history, by its original characteristics: it was, above all, associated with the world of the gods, and with their ministers; it was traditional and formalistic.

Thus the rule not to use remedies that the masters have not taught is to be explained not so much by the will of the legislator, looking to the social interest, as by the belief in the connexion between the virtues of the remedies and the magic teaching of the gods; and the same explanation helps us to understand the non-responsibility of the doctor in a case of death, if he had observed the rules of canonical therapeutics (Diod. i. 82). The assertion that physicians were paid from the public treasury is simply a misunderstanding in the classics, but a misunderstanding which exactly agrees, leaving out of account inexact terms, with historical truth. Born originally in the 'fetish-hut,' the science of healing fixed its abode in the temple. The masters remained the ministers and interpreters of the gods, and the series of *mastabas*, hypogæes, stelæ, and statues show that, from the Memphite Empire to the Ptolemys, the great doctors—those of Pharaoh, e.g., the *Sunu oiru* (=chief physicians)—were at the same time high ecclesiastical dignitaries.

Just as the teaching remained religious, the art of healing in its three great branches (symptomology, therapeutics, and pharmacopœia) remained equally impregnated with animistic and magical concepts; thus the classical doctor continued to prepare his own medicines, like the sorcerer of primitive times, and it was held as a fact that in complicated drugs each element acted on a special part of the organism, or, rather, on the evil specially infecting that part; numerous ingredients were considered curative specially for reasons of sympathetic or contagious magic (chiefly animal substances, skin, oils, and the horrible 'coprotherapy'). And yet the universal reputation of Egyptian medicine, and the very real perfection of its equipment, diagnostics, metrology, and healing processes are, on the other hand, as certainly incontestable facts (see an excellent popular account in Erman, *Life in Anc. Egypt*, tr. Tirard,

London, 1894). The distinction of a nation of superior endowment, like Egypt, is precisely the ability to substitute, gradually and without sudden breaks, the conception of the natural healing effect for the unexplained magical effect; and, as science and magic-religion both proceed, essentially, from experimentation, it happens in many cases that only the interpretation of the mechanism of the energies, and not the remedy itself, is evolved. Such as it is, with its original flaws, its lack of theoretical views, its crying errors, its childish complication, and its naive formalism, the Egyptian science of healing nevertheless constituted from the very beginning a system several thousand years in advance of the rest of human society. It retained this pre-eminence as long as Egypt existed. The testimony of Homer (*Il.* iv. 229), the admiration of the Persians (Herod. iii. 1 and 132), the fame and reputation of Egyptian medicine under the Saïtes and the Ptolemys, and the reputation in Rome of the Alexandrian school can only be mentioned at present. Such enduring fame is an explanation of the fact that the medicine of Greeks and Arabians, successors of the Copts, has given a great deal of the ancient Egyptian medicine to our school of Salerno, e.g., or to any other of our ancient seats of medical knowledge in the Europe of the Middle Ages and down to the time of the Renaissance.

5. The development of Egyptian science succeeded in giving a more distant and lofty character to the priest-doctor's sources of information. But it never completely suppressed the primitive notion of *direct* Divine intervention in cases of illness. We find gods of healing in Egypt as everywhere else; and, similarly, the great scourges—plagues or other great epidemics, *tabu*—are recognized as sent by the gods.

Egypt, however, strikes an original note, in regard to this last point, in the very restricted part played by the idea that great calamities come from the gods, though this idea was known (it may have been less familiar, however, than in the classic East, on account of the proverbial healthiness of the climate). We find mention in Manetho (Müller, *FHG* ii. 539) of the plague which devastated the country in the reign of Semempses, and a connexion is assumed in the text between this scourge and the great sins committed by men. But such statements are very rare in the Egyptian texts. The point is worth noticing, in contrast with other organized religions, for the understanding of the conception formed by the Egyptian of the general rôle of his gods. In the case of individual sicknesses, on the other hand, historical Egypt is already too far removed from the 'non-civilized' stage to establish any connexion between such and such a bodily complaint and the violation of a *tabu*; we ought to notice, moreover, that the idea of disease sent as a punishment by the gods, who either cause it themselves directly or leave the sinner defenceless against the spirits of disease, is quite foreign to the Egyptians. Texts of later date, like the hermetical books, in which mention is made of those 'divine statues which send us disease or heal our pains according to our deserts' (Menard, *Hermes Trismegiste*, 1885, p. 146), seem to be somewhat imbued with Greek or Asiatic conceptions. Disease might, however,—at least in popular cult,—be the direct punishment for a *personal* offence against a deity, but this is of course quite different from the conception of an infraction of moral rule (see *ETHICS* [Egypt.]; and, for offences against the 'goddess of the Summit,' see Maspero, *RT* ii. [1883] 118-123).

Several, if not all, of the gods who had composed the first means of battling with disease continued to grant or reveal directly to men the means of healing; and the majority of the sanctuaries, to which numerous worshippers journeyed, for their oracles (see *DIVINATION* [Egypt.]) or on annual pilgrimages, retained the privilege of miraculous cures. The temples of Isis at Coptos, of Min at Panopolis, and, in general, all those temples in which the medical books locate the marvellous discovery of writings in connexion with the teaching of remedies (Hermopolis, Lycopolis, etc.) were the places where the gods were themselves able to rout, with a single blow, the infirmities of the human body. We must add to this list a great number of smaller provincial sanctuaries, the local

gods of which, though very humble, had special powers (Assuân, Gurneh, etc.).

Survivals of these innumerable places of miraculous cures in ancient Egypt are seen in the topographical coincidences with various saints' graves of the Coptic Church—having the same privilege—and, after Muhammad, with all the tombs of Musalmān *shuikhs* which have succeeded to the veneration of ancient days for these places.

Towards the latter days of history, political events tended to group the most important of these centres of medicine round the capitals of Upper and Lower Egypt, and the infiltration of Persian and Hellenistic ideas added new elements to the rôle of the gods against disease.

6. The means used by the gods in such cases to instruct or heal patients are not well known in general. Several texts say that, under the influence of Greek ideas, the custom spread in Egypt of going to sleep inside the precincts of the temples of the gods of healing, or near the supposed tombs of those celebrated historical personages whom legend gradually confused with mythical kings and the gods of healing (see DIVINATION [Egyp.]). This is the case for Imhotep (cf. Psherenptah stela). Invalids were informed of their remedies oftenest in dreams, as is proved by a certain number of allusions in the epigraphical monuments, by the accounts in popular tales, and by the witness of Diod. i. 25. Direct cure, following upon a prayer, and without divinatory revelation, is not formally entertained except in Herod. ii. 65, according to whom sums of money equal in weight to a half or a third of the sick child's hair (?) were vowed to the gods in case of recovery, or a promise was made to buy a beast for the temple herds. The sudden inspiration of the doctor enlightened by Divine grace and working *διὰ τῆς τοῦ θεοῦ δωρεῖας* is not a very Egyptian trait, and may be due to foreign influences (cf. Berthelot, *Alchimistes grecs*, 1890, p. 226). The essentially native form of miraculous cure by the intercession of the god appears to have been worked chiefly by the direct application of the healing fluid, either by the priest who carried the Divine relics, the *nibsau*, or, in important cases (demoniac possession, epilepsy, and the like), the god himself. The famous Stela of Bakhtan is a familiar example of this type of curing by exorcism worked by a Divine statue. The adoration of the demon of disease, his overthrow, and his departure from the body of the princess, are merely an instance of a practice current in all the religions or 'semi-religions' in which there is a 'dispelling of demons.' It is more interesting to note the manner in which the statue of a god was supposed by the Egyptians to be capable of possessing the necessary power. The Egyptian text proves that this power was possible only to a 'secondary' statue of the god—one of those animated, for a special series of activities, by an 'energy-soul' of distinct name. It derived its chief power from the 'essential' statue of Khonsu, the statue which contained the magic soul of the god and made his will known by movements of its head (see DIVINATION [Egyp.]). This famous statue never left Thebes; it kept the best of the Divine substance there, and consented to detach and lend its healing forces only to such and such a one of its doubles, 'by bestowing upon it (by the nape of the neck) its protective fluid at four intervals' (which is a very valuable indication of the antiquity of the magical conception). Apparently, then, the power against disease did not belong to all the 'doubles' of a god. It was the privilege of the one image in which dwelt the 'true name,' and this assumes that power against demons was a part of the ultimate reserve of the personality of a being.

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Finally—the primitiveness of the practice of exorcism by statues being a traditional survival—we may hold that, at the end of a long period of evolution, the views of the Egyptian upper classes on disease often came near to really lofty conceptions. Though, as everywhere, sorcery, the bastard child of primitive religion, preserved the rudeness of the 'dispelling of spirits' of primitive days, still the fight for healing, while maintaining its character of Divine teaching, became more and more natural and scientific. If, indeed, it attributed a large share to the supernatural intervention of the gods, it also gave an important place to Divine *inspiration*, guiding the man of science. Thoth-Hermes, in his various names and multiple capacities, inspires sacred medicine with a higher knowledge of human infirmities, without, however, assuming the absence of resources founded on therapeutics. The priest-doctor of the later ages of Egypt is a noble figure, resembling that of the magnificent portrait left by Cheremon (*FHG* iii. 497). And between the magic idol (or fetish) of the first healers of Egypt and the Thoth-Hermes of the end there is the same distance (and the same long way laboriously traversed) as between the anthropophagous Osiris of the Pyramid Texts and the Græco-Egyptian Osiris, who gives a seat at his table of honour in Paradise to the poor beggar 'who had not had his share of happy days on this earth.'

LITERATURE.—There is no monograph treating the subject synthetically. A great number of details and partial theories are found scattered throughout the bibliography of Egyptian medicine. Mention may be made, amongst the works and articles treating more specially the ideas discussed above, of: H. Brugsch, *Über die medizinische Kenntniss der alt. Ägypter*, Brunswick, 1853; F. J. Chabas, *Œuvres*, 1903, vol. ii., *Bibl. Égyptol.* ii. 173, and *La Médecine des anciens Égyptiens*, Châlons-sur-Saône, 1861; G. Maspero, *Revue Critique*, 1898, ii. 69, *Histoire*, ii. (Paris, 1895) 214-220, 238, 281, *PSA* xiii. 501-503, xiv. 312-314, *Études mythol. archéol.* iii. (1901) 299, 301, *Journal des Savants*, Apr. 1897 and Feb. 1898, *Journal des Débats*, 28 Feb. 1906; Mallet, *Kasr el Agouz*, Cairo, 1903; E. Naville, *Sphinx*, xiv. (1910) 137; F. Oefele, *Archiv f. Parasitologie*, iv. (1901) 481, v. (1902) 461, *OLZ* ii. 26, v. 167, vi. 376, *AZ* xxxvii. (1898), 55, 140, *Wiener Klinische Wochenschrift*, 1899, no. 47, *Prager Mediz. Wochenschrift*, 1899, nos. 24-28, and especially 'Geschichte der vorhippokratischen Medizin, in der *Handbuch der Geschichte der Medizin*, I., Jena, 1901; W. Wreszinski, *Der grosse medizinische Papyrus des Berliner Museums*, Leipzig, 1909; and J. G. Wilkinson, *Manners and Customs*, ed. London, 1878, ii. 354-368.

GEORGE FOUCART.

DISEASE AND MEDICINE (Greek and Roman).—Disease and its treatment by rational medical means belong to the domain of scientific medicine. The help of the gods was sought in illness and accidents by purely religious means—by prayer, sacrifice, and, above all, the institution of incubation. The gods granted their assistance either directly, by a miracle of healing, or indirectly, through the medium of an oracle of healing. The subject will be fully treated in the artt. HEALTH AND GODS OF HEALING, INCUBATION.

ED. THRAEMER.

DISEASE AND MEDICINE (Hindu).—1. Disease.—The earliest view of disease in India was that all morbid and abnormal states of body and mind for which no special reason was assignable were due to the attacks of demons. In the medical charms of the *Atharvaveda*, the earliest medical book of India, the diseases are constantly addressed as demoniacal beings. Thus Fever, a demon who makes men sallow and inflames them like fire, is implored to leave the body, and is threatened with annihilation if he should not choose to do so. 'O Fever,' says another charm, 'thy missiles are terrible; from these surely exempt us.' Itch (*pāman*) is called Fever's brother's son. The malevolent spirits of disease were regarded as specially dangerous to children. Thus infants were liable to be attacked by Naigameṣa, a demon

with a goat's head, who is mentioned in early Sanskrit literature, and represented in an old sculpture found at Mathurā. Jambha, another Vedic godling of disease, was supposed to cause the trismus of infants. A 'dog-demon' attacking boys is said to mean epilepsy, or perhaps whooping-cough. Another ancient superstition attributed the origin of dropsy to Varuna, the god of the waters, who binds the guilty, *e.g.* liars and false witnesses, with his terrible snake-bonds, *i.e.* dropsy. Elves and nightmares, called *Apsaras* and *Gandharvas*, were believed to pay nocturnal visits to men and women. Disorders of the mind were also very generally ascribed to possession by a demon (*bhūta*), even in scientific works on medicine such as the manuals of Charaka and Suśruta. When the belief in transmigration took hold of the Hindu mind, it furnished a new explanation of the origin of disease. Diseases and infirmities were traced to sins and offences committed in a previous birth. According to this doctrine of the 'ripening of deeds' (*karmavipāka*), a mortal sinner will have leprosy in a future birth; a Brāhman-killer, pulmonary consumption; a drinker of spirits, black teeth; a calumniator, a stinking nose; a malignant informer, stinking breath; a thief of food, dyspepsia; a thief of horses, lameness; a poisoner, a stammering tongue; a usurer, epilepsy; an incendiary will be born a madman; one who kills a cow or steals a lamp will be blind, etc. (see *Viṣṇusūtra*, ch. xlv.). Most of these punishments in a future life are symbolical. As a consequence of these beliefs, religious penances were performed, for instance, by lepers in order to atone for the heinous sins in a former existence to which their illness was attributed. A more rational theory of disease was found in the idea that worms gave rise to morbid conditions—a universal belief which may perhaps be viewed as the first germ of the modern bacillus theory. Headache and ear and eye diseases, as well as intestinal diseases, were attributed to worms; worms in children and in cattle also find special mention in the hymns of the *Atharvaveda*. The ancient physician Jivaka (see below) is alleged in the Buddhist scriptures to have cured a patient by making an incision in his head and pulling two worms out of the wound. The medical Sanskrit works derive the origin of internal diseases principally from a wrong mixture of the three humours (*tridoṣa*) of the human body—wind, bile, and phlegm; and thus distinguish between wind, bile, and phlegm diseases.

Of particular diseases, *fever* is perhaps the most important. It is called in the medical works the 'king of diseases,' and appears to have been already the most dreaded ailment at the time of the composition of the *Atharvaveda*, the symptoms mentioned suggesting true malarial fever. This corresponds with modern statistics, according to which nearly two-thirds of the deaths in India are due to fever. *Leprosy* is said to consist of eighteen varieties, seven heavy, and the remaining ones light. It is evident, however, that true leprosy became confused with various skin diseases. *Small-pox* (*masūrīkā*) is first mentioned in mediæval medical works. The *plague* is not mentioned in Sanskrit medical works, and seems to be of recent importation in India.

2. Medicine.—Folk-medicine in India is closely connected with sorcery. 'The most primitive witchcraft looks very like medicine in an embryonic state' (Sir Alfred Lyall, *Asiatic Studies*, 1st ser., 1907, p. 118). The earliest collection of charms found in the *Atharvaveda*, which is reckoned as one of the four Vedas, though it never attained the same degree of sanctity as the other three, probably because it contains incantations for destroying an enemy, the idea of injuring another,

be he even an enemy, being opposed to the spirit of Hinduism. In the medical charms of the *Atharvaveda* and of the *Kausikasūtra*, the diseases, and frequently the curative agencies as well, are addressed as supernatural beings (see above). The remedies applied are based, in many cases, on a rude kind of homœopathic or allopathic principle. Thus the yellow colour of a patient affected with jaundice is sent where it naturally belongs—to the yellow sun and yellow birds—the patient being seated on a couch beneath which yellow birds are tied. The hot fever is sent to the cool frog, who may be supposed to find it enjoyable. Dropsy, the disease sent by Varuna, the god of the waters, is cured by sprinkling water over the patient's head by means of twenty-one (three times seven) tufts of sacred grass, the water sprinkled on the body being supposed to cure the water in the body. A coral spear-amulet is used to counteract pains that seem as if from a spear—either rheumatism or colic. White leprosy is cured by applying black plants. Red, the colour of life and blood, is the natural colour of many amulets employed to secure long life and health. Amulets, mostly derived from the vegetable kingdom, are used a great deal, the idea being that the supposed curative substance has to be brought into contact with the body. The sores, tumours, and pustules apparent in scrofulous diseases are conjured to fall off, or fly away, because they were supposed to have settled like birds on the afflicted person. The cure of wounds and fractures is effected by incantations which have been compared by A. Kuhn with the Merseburg charm of German antiquity. Flow of blood is charmed to cease by a hymn which seems to indicate the use of a bandage or compress filled with sand. There are many charms for the cure of the poisonous bites of snakes, also charms directed against poison not derived from serpents. Water and fire are viewed as excellent remedies for many diseases; thus a Vedic charm declares: 'The waters verily are healing, the waters cure all diseases.' Fire is especially invoked in charms against mania, and sacrifices to the god of fire, burning of fragrant substances, and fumigation are amongst the principal rites against possession by demons. Some of the herbs used in medicine seem to owe their employment as remedies to their names only, not to any real curative properties possessed by them. The charms of the *Atharvaveda* have been fitly compared with the sacred formulæ of the Cherokees, and other spells current among the Indians of North America. On the other hand, they must be acknowledged to contain a fairly searching diagnosis of some diseases, as, *e.g.*, of malarial fever with its accompanying symptoms, such as jaundice, headache, cough, and itch.

The second period of Indian medicine is the Buddhist period, ushered in by Jivaka Komārabhacca, the contemporary of Buddha himself, of whom the most wonderful cures are reported, and whose name indicates that he was particularly famous for the treatment of children's diseases. The canonical books of the Buddhists contain a number of medical statements. The famous Bower MS, written in the 5th cent. A.D., and called after an English traveller who discovered it at Mingai in Central Asia in 1890, contains three medical treatises, one of them being a spell against snake poison, said to have been applied with success by Buddha himself when a young pupil of his had been bitten on the foot by a cobra. Buddhist kings founded hospitals for men and beasts, and appointed regular physicians. The famous Buddhist convent at Nālandā in Bihār, of which some ruins remain, had ample accommodation, in the 7th cent. A.D., for 10,000 students of philosophy and medicine.

The third period produced the now current Sanskrit treatises of Charaka, Suśruta, Vāgbhata, Mādhavakara, Vaṅgasena, Hārīta, Bheda, Vṛnda, and others on medicine in general or on particular subjects, such as pathology, fever, infantile diseases, *materia medica*, etc. Charaka is said to have lived at the court of the Buddhist king Kaniska (c. A.D. 120); the great work of Suśruta is said to have been re-cast by the celebrated Buddhist sage Nāgārjuna; Vāgbhata was himself a Buddhist. The connexion of the modern period of medical science in India with the Buddhist epoch is thus established, and the high stage of development reached by it seems to date, in the main, from the Buddhist time. The *materia medica* in these works embraces an immense number of drugs belonging to the mineral, vegetable, and animal kingdoms. There are special works on pharmacy and chemistry, containing ingenious processes of preparation, especially of quicksilver and other metallic medicines, which were prescribed internally as well as externally. Indian surgery, as represented in Suśruta and Vāgbhata, can boast of the practice of lithotomy and laparotomy, and of operations performed in cases of cataract, piles, disease in the uterus, for forming new ears and noses (rhinoplasty, which seems to have been borrowed by European surgeons from India), etc., with more than a hundred different surgical instruments. Indian medical works and doctors were exported into Arabia, and Charaka and Suśruta may be found quoted in the writings of Rāzī (c. A.D. 900) and other eminent Arabian doctors. Many medical Sanskrit texts were translated into Tibetan, and again from Tibetan into Mongolian and other languages of Central and Northern Asia. On the other hand, it appears probable that the physicians of India at an earlier period learnt a great deal from the Greeks, especially in the field of surgery, their own knowledge of anatomy being too limited to admit of the performance of difficult surgical operations. Moreover, the ancient superstitious notions were retained by them. Thus a certain form of smallpox, which is treated with cold applications, is personified as Sītālā, 'the cold deity,' and is to be worshipped with a prayer in which it is declared that, whenever a person afflicted with smallpox addresses the deity as 'Sītālā, Sītālā,' the eruptions will at once disappear from his skin, and that this goddess possesses a rain of ambrosia for those tormented by pustules. Seven forms of this disease are described, which survive in the seven smallpox sisters, including Sītālā, whose worship is very common in N. India. The more aggravated forms of mental diseases are attributed to possession by a demon, and the cure is to be effected by propitiating the devil with oblations in a fire lighted in a temple, and with gifts consisting of eatables, an umbrella, etc. Infants are particularly liable to be attacked by a demon, the symptoms described pointing to lock-jaw. The treatment of snake-bites includes the recitation of charms. When a child is born, various religious ceremonies take place, such as the offering of oblations in a fire kindled for the purpose, with a view to protecting mother and child against the attacks of demons. The prognostics of disease depend in the first place on various omens, such as the appearance and dress of the messenger come to summon the physician, and the objects or persons seen by the latter on his way to the patient. The Indian physicians (*kavirājas*) of the present day, who belong to the Vaidya caste in Bengal, and to Brāhman castes in most other parts of India, have naturally been losing ground owing to the introduction of European scientific medicine into India; nevertheless they continue to be consulted by the common people, who also still adhere to the popular superstitions

of old. Various godlings of disease in nearly all parts of India are worshipped with offerings of milk, flowers, fruits, sweets, rice, betel-nuts, and sometimes a goat. When a child becomes dangerously ill with smallpox, it is sometimes carried to an image of Sītālā, and bathed in the water which has been offered to the goddess, some of which it is given to drink. There are also incantations for almost every disease—headache, toothache, fever, dysentery, leprosy, madness, burns, scalds, snake-bites, etc. In S. India devil-dancing is very common. Whenever the 'doctor' attending a sick person finds that the malady will not yield to his remedies, he certifies that it is a case of possession, and the exorcizer is then called in to expel the demon. The malignant spirits, the supposed authors of a plague, are tempted to pass into the wild dancers and so become dissipated, the devil-dancers being also thought to become gifted with clairvoyance and a power of delivering oracular utterances on any subject of common interest. See, further, DISEASE AND MEDICINE (Vedic).

LITERATURE.—M. Bloomfield, 'The Atharva-veda,' in *GIAP* li. 1, Strassburg, 1899, and in *SBE* xlii., Oxford, 1897; J. Jolly, 'Medicin,' *GIAP*, 1901; T. A. Wise, *Commentary on the Hindu System of Medicine*, London, 1860; W. Caland, *Altindisches Zauberritual*, Amsterdam, 1900; M. Winternitz, 'Folk-medicine in Ancient India,' in *Nature*, 7th July 1898; Sir Bhagvat Sinh Jee, *A Short History of Aryan Medical Science*, Lond. 1896; P. C. Ray, *History of Hindu Chemistry*, Lond. 1902, vol. i.; *Census of India*, 1901, *Bengal Report*; Sir M. Williams, *Modern India and the Indians*, London, 1879; W. Crooke, *Popular Religion and Folk-lore of N. India*, London, 1896.

J. JOLLY.

DISEASE AND MEDICINE (Jewish). — I.

DISEASE.—I. Biblical.—Three initial stages may be traced in the perennial consideration of this subject. Disease—so it was held—is sent from the Deity; it is therefore a punishment for sins committed; that is, every one who suffers from disease has previously done some wrong for which he is atoning by his bodily afflictions. It is obvious that this case is completely covered by the larger and more general question of evil, as dealt with, for example, in Job. Yet, although the Book of Job might be said finally to solve the problem as far as contemporary thought was concerned, inquiry reasserts itself after a brief interval.

In the investigation of Biblical examples of sickness consequent on sin, care must be taken to exclude those cases where the punishment takes the form of a violent or unnatural death. These are included in the larger category of evil. Thus the case of Korah (Nu 16^{29b}) and that of the disobedient prophet (1 K 13^{11c}) do not apply, but the death of Bathsheba's first son (2 S 12¹⁴) or the smiting of the Egyptian firstborn (Ex 12²⁹) might certainly be cited. It is also important to differentiate cases where the sinner himself is smitten from those where the punishment falls vicariously on others who may be innocent, but whom the sinner loves more than himself. To the former category belong the punishments of leprosy meted out to Miriam (Nu 12¹⁰) and Gehazi (2 K 5²⁷); to the latter, the death of Abijah, son of Jeroboam (1 K 14¹²), for the death of the child meant the destruction of Jeroboam's fondest hope—the foundation of a dynasty. Further, as a corollary to the latter class may be mentioned those cases in which the community suffers from disease because of (a) general and (b) individual trespass. The community would seem to be punished because it participates actively or even passively by not rejecting the criminal, for in the absence of duly appointed officials it is every one's duty to take the law into his own hands. It is also suggested that the knowledge that the commission of a certain action may involve others in disease and pain may act upon the evil-doer as a deterrent.

An enumeration of all the cases in the Bible

where disease is a punishment is unnecessary. It may suffice to mention a few examples where it is inflicted as a retribution for sin. In some cases leprosy is the means of chastisement: thus Miriam (Nu 12¹⁰), Gehazi (2 K 5²⁷), and Uzziah (2 Ch 26²¹) were smitten with this disease for slander, avarice, and presumption respectively. Shameful diseases are the result of foul crimes or irreverence (e.g. 'Er and Onan, Gn 38⁷ etc.; the Philistines, 1 S 5^{12c}); Pharaoh (Gn 12¹⁷) and his household were afflicted with plagues on account of the abduction of Sarah; Abimelech and all his house (Gn 20¹⁸) were smitten with barrenness for the same cause; the Sodomites were struck with blindness (Gn 19¹¹) for their attack on Lot; and, finally, Job's sickness is ascribed by his friends to his sinfulness. Gluttony was punished by gastric plague and death at Kibroth-hattaavah (Nu 11³⁴), and in the *Tokkēhāh*, or Rebuke chapters (Lv 26¹⁴ etc., Dt 28¹⁵ etc.), various diseases are enumerated which will inevitably follow disobedience to God's word.

Turning to the NT, we may trace the same tendency. Thus (1 Co 11³⁰) those who receive communion in an unworthy manner suffer disease in consequence. Further, there is the opposite case of apparently undeserved blindness (Jn 9^{17c}), as an explanation of which the possibility of sin *in utero* used to be suggested; and, finally, there are the instances where disease is said to be due to Satanic agency or demoniac possession (Lk 13¹⁶, Mk 9¹⁷, Lk 11¹⁴).

That diseases follow sin may also be inferred negatively from such passages as Ex 15²⁸ ('if thou wilt surely hearken to the voice of the Lord . . . the diseases which I put on the Egyptians I will not put on thee,' cf. Dt 28⁶⁰); or the Fifth Commandment, where longevity is the reward for obedience to parents; or, in a more general way, Lv 18⁵ ('Ye shall keep my statutes and my judgments by doing which a man shall live').¹

Although these and similar instances are capable of being classified under various different heads and of being arranged in other ways, yet it is by no means clear that alterations would produce any re-adjustment of ideas with reference to the theory of disease. It is not safe to dogmatize or to differentiate between the attitude of the Pentateuch and the Prophets; it is unwise to establish distinctions of time or place, because in no subject is there greater scope for inconsistency. The human mind hovers between the Scylla of ascribing disease to the work of the Deity, and the Charybdis of making disease accidental and so independent of Divine control, by which circumstance Divine omnipotence would be impugned. The 'golden mean' may offer a workable compromise, but it will not often bear philosophic investigation. The Semites, as has often been shown, identified cause and effect. *Péullāh* means both reward and the deed which merits the reward. *Hattā'th* means both sin and sin-offering. The children who mocked the prophet were devoured by bears (2 K 2²³), and the irresistible conclusion to be drawn was *post hoc ergo propter hoc*. The writer of the Books of Kings views history purely from the standpoint of morals; happiness and misfortune, health and disease, are the result of previous conduct; and insistence on this theory was the sole justification for the study of history. The adoption of this attitude was conducive to a belief in free will, since man thus had the power and choice of avoiding disease, while the opposite theory, which made disease fortuitous, led to predestination. To such an extent did the theory that conduct alone is responsible for disease

prevail that Asa (2 Ch 16¹²) is blamed because 'in his disease he sought not the Lord but the physicians.'

The Deity, then, is the source of evil as well as of all good, since He is omnipotent. Yet already in early times it was felt to be impious to ascribe misfortune and disease directly to the Godhead. Hence all manner of expedients were adopted to avoid such a position. In the Books of Samuel 'the spirit of God' is responsible for good and happiness, while sickness and ill were wrought by 'a spirit from (מֵאֵל) God.' This was largely developed in the Targums (cf. Memra, Logos, etc.). There is no escape from attacking Divine omnipotence, if disease is independent of the Godhead. Still disinclination to ascribe disease to God grew and gained strength from the earliest times. The example of Korah's sons is a case in point. All the guilty parties gather together, the innocent are warned to withdraw from their company, and finally (Nu 26¹¹) it is stated: 'notwithstanding, the sons of Korah died not.' Still stronger instances occur which afford negative proof. The wicked cannot involve the righteous in disease and death, but the righteous can, conversely, deliver the wicked. Ten good men can save Sodom (Gn 18³²); punishment extends to the third and fourth generation 'of them that hate me,' while loving-kindness prevails to the thousandth generation (Ex 20^{5, 8}). The *Middath ha-Rahamim* (attribute of mercy) conquers the *Middath had-Din* (attribute of justice). Finally, the teaching of Job and of Ezekiel established the idea of individual responsibility, and the doctrine that suffering and disease are not necessarily the consequence of wrongdoing.

2. Rabbinical.—In considering Rabbinic literature it will be found that the same tendencies may be traced and the same stages observed. We are brought back to earlier views such as may be found in the Pentateuch and Former Prophets, and, seemingly, the teaching of Job and Ezekiel is completely gone. It will, therefore, suffice to adduce a limited number of instances. In the first place, slander is responsible for many diseases: this may be seen most clearly in *Lev. Rabba* xviii. 4 (ed. E. Schraenzel, Stettin, 1863, p. 29, fol. 15a, outer col. lines 1 ff.):

'There was *hārūth* (engraving) on the tablets of stone [Ex 32¹⁸]. Read not *hārūth* but *hērūth* (freedom). Freedom from what? . . . from chastisements . . . R. Simeon b. Yohai says, at the hour when Israel stood at Sinai and said (Ex 24⁷) "All that the Lord hath said we will do and obey," there was not among them either one with an unclean issue or a leper or cripple or blind or dumb or deaf or mad: concerning that hour it is said (Ca 4⁷): "Entirely fair art thou, O my companion, neither is there blemish in thee." When they sinned, not many days passed when there were found among them those with unclean issues and lepers. About that hour it is said (Nu 5²⁴), "And they dismissed from the camp every leper, etc." Henceforward Israel was liable to issues and leprosy. R. Huna . . . says . . . leprosy came for slander . . . to teach thee that plagues come only in consequence of slander. . . . [The whole passage should be studied.]

In the *Mekhilta* on Ex 23⁸ (ed. I. H. Weiss, Vienna, 1865, p. 106a, top) acceptance of bribes is said, on the basis of the Scriptural verse, to lead to blindness:

'Every one who accepts money to pervert justice (or even to execute justice) will not leave the world until he is bereft of his eyesight. According to R. Nathan, one of three things will befall him: he will lose his knowledge of the Torah, so that he will declare unclean clean, or declare clean unclean, or he will be in need of human aid, or he will lose his eyesight.'

A similar thought is expressed in the parallel passage in *Siphre* to Dt 16¹⁸ (ed. M. Friedmann, Vienna, 1864, §144), towards the end of the section. The *Mekhilta* to Ex 15²⁸ (fol. 54a) should also be regarded. This thought may be followed in a more extended form in Bab. *Erukhin* fol. 16a, where R. Johanan (quoted by R. Samuel b. Nahmani) says:

¹ See Manasseh ben Israel's *Conciliator* (tr. E. H. Lindo, London, 1842), question 89, p. 138, question 104, p. 164; see also pp. 26, 114, and question 139, p. 228.

'Plagues come for seven sins, for bloodshed, perjury, unchastity, pride, embezzlement, pitilessness, and slander, as it is said (Ps 101⁹), "him who slanders his neighbour secretly, him will I cut off. . . ."

The following verses are then cited to prove each case respectively: 2 S 3²², 2 K 5²³⁻²⁷, Gn 12¹⁷, 2 Ch 26¹⁶, Lv 14³⁶⁻⁵⁵. See also *Aboth* v. 11 (Singer's *Prayer Book*⁶, London, 1900, p. 200):

'Seven kinds of punishment come into the world for seven important transgressions. If some give tithes and others do not, a dearth ensues from drought, and some suffer hunger while others are full. If they all determine to give no tithes, a dearth ensues from tumult and drought. If they further resolve not to give the dough-cake (Nu 15²⁰), an exterminating dearth ensues. Pestilence comes into the world to fulfil those death penalties threatened in the Torah, the execution of which, however, is not within the function of a human tribunal. . . . At four periods pestilence grows apace: in the fourth year, in the seventh, at the conclusion of the seventh year, and at the conclusion of the Feast of Tabernacles in each year; in the fourth year, for default of giving the tithe to the poor in the third year (Dt 14²⁸⁻⁹); in the seventh year, for default of giving the tithe to the poor in the sixth year; at the conclusion of the seventh year, for the violation of the law regarding the fruits of the seventh year; and at the conclusion of the Feast of Tabernacles in each year, for robbing the poor of the grants legally assigned to them' (i.e. gleanings, forgotten sheaves, corners of the field (Lv 19⁹, Dt 24¹⁹)).

The death of women at childbirth is due to three sins,

'because they have been negligent in regard to their periods of separation, in respect to the consecration of the first cake of the dough and in the lighting of the Sabbath lamp' (Mishn. *Shabb.* ii. 6 (Singer's *Prayer Book*, p. 121)).

The effect of sin (*yēser hā-rā'*) on man and on the creation generally is to cause great disfigurement, and mysterious diseases are due to sin. The passage from *Beresith Rabba* and elsewhere dealing with this point may be studied in F. R. Tennant's *Sources of . . . Original Sin*, ch. vii. ff.

Finally, R. Ami says:

'There is no death without sin, and there is no chastisement without crime' (Bab. *Shabb.* 55a foot). This passage should be carefully studied.

Outside the immediate range of the Talmud and Midrashim the idea may be traced frequently; e.g. Sir 31²² (p. 24, ed. Strack, Leipzig, 1903): 'In all thy actions be modest, that no misfortune befall thee'; or Judah ha-Levi's *Kitāb al-Khazari*, pt. ii. § 58:

'It was one of the wonderful traits of God that His displeasure for minor transgressions was shown on the walls of houses and in the clothes, whilst for more grievous sins the bodies were more or less severely stricken' (p. 119, ed. Hirschfeld, 1905: see the whole paragraph).

II. *MEDICINE*.—Connected with the question of disease is the question of cure. The function of the priest as physician is clearly laid down in the Pentateuch; he enjoys far greater authority than the surgeon mentioned in Hammurabi's *Code*, probably because his sphere of treatment was more limited: in Assyria surgical operations seem to have been undertaken more commonly. The Rabbis declared that it was a positive commandment (צו מצד) for a man to get himself cured, on the basis of Ex 21¹⁹ (see also Rashi, *in loc.*). Healing as a result of special prayer occurs repeatedly in the Bible. According to the Rabbis, all healing is a miracle, and repentance will effect a cure. Thus Bab. *Nedarim* 41a declares:

'No sick man can recover from his disease until his sins are forgiven . . . greater is the miracle performed to a sick man by his restoration to health than that wrought to Hananiah, Mishael, and Azariah (Dn 3¹²). For their fire was earthly and any mortal could quench it, whereas that of the sick man is from heaven and defies human hand' (see also further).

So, too, the Palestinian Rabbis denied that demons could cause or cure disease (see *DEMONS AND SPIRITS* [Jewish]), for disease came from God without reference to their agency (see also S. Schechter, *Fragment of a Zadokite Work*, Cambridge, 1910, p. 1, ch. xiv. p. 12, line 3). On the other hand, a man must not avoid sin on that account alone.

'A man must not say, "I will abstain from forbidden foods in order to strengthen my body and avoid disease, but in order to do the will of my Father in heaven."'

The technical nature of cures recommended by

the Rabbis does not fall within the scope of the present article. Cures by prayer were frequent. See Mishn. *Berakhoth*, v. 3 (p. 10, ed. Staerk, Lietzmann's series, Bonn, 1910):

'R. Hanina b. Dosa used to pray over the sick and used to say, "Such a one will live," "Such a one will die." They said to him, "Whence knowest thou?" he replied, "If my prayer is fluent in my mouth, I know that it will be received."'

Reference may also be made to קצת (Singer's *Prayer Book*, p. 47; partly also on p. 16, § 8 of no. 58 of Lietzmann's series, *Altjud. Gebete*, Bonn, 1910); to נזקת הניסל (p. 148 top); to the שמע תהלים, or therapeutic use of Psalms (see also art. *CHARMS AND AMULETS* [Jewish]); and to the extremely beautiful prayer before reciting the Psalms in cases of sickness.¹ The prayer deserves careful study. It must be observed that, although the Rabbis fully believed in the efficacy of prayer, they did not, as the Christian Scientists do, deny the existence of disease or the power of drugs. The Essenes, for example, according to Philo, joined the care of the body to that of the soul by avoiding cities: 'just as foul air breeds disease, so there is danger of contracting an incurable disease of the soul from . . . bad associations' (*Quod omnis probus liber*, § 12, cited in *JE* v. 227, foot, inner column).

The principle of 'measure for measure,' fitting the punishment to the sin (כדי גזר ענין עוון), was strongly held by the Rabbis, as may be seen from the extracts cited above, but, in spite of this, the solution of the problem was found in the theory of צדקה של עברה, 'chastisements of love' ('whom the Lord loveth he chasteneth'), and this is, of course, the real solution of the whole problem of evil: man's inability to realize that what is to him evil or misfortune need not in reality be so. See Mishn. *Berakhoth*, ix. 5 (p. 17, ed. Staerk, Bonn, 1910, Lietzmann's series):

'קל כסאך קל כסאך קל כסאך' With all thy might (read not כסאך but כסאך); for every measure (good or evil) which He meteth to thee, thank Him.'

Misfortune is not necessarily evil, nor is disease necessarily the outcome of sin. Man cannot always distinguish good from evil, and his mind has not the power of perception, beyond a certain well-defined limit. 'From the mouth of the Lord shall there not proceed both evil and good?' (La 3⁸). 'I the Lord make peace and create evil' (Is 45⁷). The inability of man to comprehend the Divine scheme for the government of the universe leads him to erroneous conclusions as to the nature of evil and the origin of disease. This was the generally accepted conclusion.

LITERATURE.—*JE*, art. 'Medicine'; art. *CHARMS AND AMULETS* (Jewish) in the present work; Hamburger, art. 'Krankheiten'; Maimonides, *Guide*, chs. on the 'Evils', pt. iii. etc. (see Friedländer's tr., London, 1904); S. Schechter, *Aspects of Rabbinic Theology*, London, 1910, ch. xiv. etc.; C. G. Montefiore, art. 'Retribution,' in *JQR*, vol. v., July 1893; F. R. Tennant, *Sources of . . . Original Sin*, Cambridge, 1903, ch. vii. etc.; S. Levy, 'Doctrines of Original Virtue,' in *Orig. Virt. and Other Studies*, London, 1907; F. Weber, *Jüd. Theol.*, Leipzig, 1897.

HERBERT LOEWY.

DISEASE AND MEDICINE (Persian).—The doctrines concerning bodily diseases and their treatment by medical art form a very considerable part of the Avestan system. In strict accordance with the dualistic conception of the universe, bodily disease and its treatment by medical art correspond exactly with sin, regarded as a spiritual malady, and its treatment by religious exercises conceived as an ethical or spiritual medicine. Similarly, owing to the dualistic division of the universe into a good and an evil creation, all bodily diseases are expressly declared to be creations of the Evil Spirit (see under art. *DUALISM*). In *Vend.* xxii. Ahura Mazda declares that Ahra Mainyu created 99,999 diseases (a fanciful number, like that of the Hindu

¹ Both of the last-named items may be seen at the end of Heidenheim's ed. of the Psalms, Roedelheim, 1862.

gods), which are variously estimated, however, as 90,000 in the Gujarati translation, or as 10,000 (*Bund.* ix. 4), or even as low as 4333 (*Dinkart*, ed. Peshotan, vol. iv. cap. 157. 41, 43). A considerable number of names of diseases are preserved in various parts of the Avesta, and have been carefully collected and discussed, especially by Geiger in his *Ostirân. Kultur*; but most of the names are decidedly obscure, and little improvement has been made since Geiger's study; even Bartholomae's great lexicon throws no further light upon the terms used.

It is fairly certain, however, that we may find in them fevers (*tafnu*, *dazhu*), and diseases of the head (*soṛasti*, *sārama*). As skin diseases were and still are a special scourge of the Iranian countries, we naturally expect to find mention of leprosy, and as a matter of fact this dread disease apparently (in spite of de Harlez's striking argument to the contrary) is indicated by the term *paeso vitareto tanus* (*Vend.* ii. 85; *Yt.* v. 92), probably 'leprosy which segregates the body' (cf. Pahlavi *pēshēh*, Pāzand *pishk*, Mod. Pers. *pēs*, Kurdish *pish*). In *pāman* (*Yt.* xiv. 48) we may see either leprosy, according to the general interpretation, or *itch* (S. E. Dubash), which is probably also indicated by *garenu*. Among other terms, more or less obscure, the identification of which is largely conjectural, *vavreshi* (*Yt.* xiii. 131) probably indicates a venereal disease; *tafnu* . . . *tamuye zoishnuye* (*Vend.* vii. 173) may be puerperal fever; *skenda* (*ib.* v. 160) may indicate a rupture; *aghōsti* (*ib.* vii. 145) and *vazemoasti* (*ib.* xx. 9, 11) most probably signify rickets and caries of the bone; *duruka* (*ib.* xx. 14, 20) almost certainly calculus; *kurugha* (*ib.*) seems to be the Modern Persian *kurā*, carbuncle (Houtum-Schinder, *DDMG* xxxvii. [1883] 54 ff.). In *āstairya* we seem to have the name of some eruptive disease, like smallpox or measles. Among a number of hitherto quite unidentified terms, three beginning with *azh-* in all probability refer to diseases caused by snake-bite.

The origin of the art of medicine as recorded in the Avesta is supernatural, and associated with the name of the hero Thritha, who, according to the *Vendidad*, was the first physician, 'the first of those heroic, active, benevolent men, with magic power, brilliant, powerful, before the giving of the Law, who made the various diseases cease.' He besought Ahura Mazda for a remedy against poisons (*vish-citrem*, or perhaps 'eine von Giftpflanzen stammende Arznei' [Geiger]), and a metal knife (for surgical operations). Ahura Mazda narrates that he gave him thousands and millions of medical plants, among them the mysterious *guokerena*, the later *gōkart* tree, the source of all medicines (*Vend.* xx. 1-17). The Yashts appear to confound this Thritha with Thraētaona, whose name seems to be a patronymic derived from the former—for his *fravashi* is invoked against diseases. Darmesteter quotes Hamza as stating that Faridūn (*i.e.* Thraētaona) was the inventor of medicine, and adds that the Modern Persian amulets against disease bear the name of Faridūn (see CHARMS AND AMULETS [Iran.], vol. iii. p. 449a). Moreover, the genius Airyaman (apparently the personification of prayer) is also intimately connected with the medical art. Ahura Mazda calls him to come and expel disease and death (*Vend.* xxii., xxiii.). Later on, in the Pahlavi *Dinkart* he becomes the tutelary genius of physicians, to whom he gives miraculous help to cure men's bodies. As we shall see, prayer was always regarded as the most efficacious of remedies.

The commonest term to indicate indifferently 'medicine,' 'healing,' 'medicaments,' or 'physician,' is *baeshaza*, corresponding to the Skr. *bhishaj*, *bhishaja*. In Pahlavi we find this word as *beshaj*, but more commonly under the curiously inverted form *bijshak*, as in Modern Persian and in the Armen. words *bzhishak*, 'physician,' and *bzhishkel*, 'heal.'

The Avesta attributes great importance to the threefold division of medicine according to the means employed: *kereta*, the knife; *urvara*, herbs; *manthra*, formula—as we should say, surgery, medicine, and prayer. This is also the well-known division of the Greeks: Pindar, speaking of Asklepios, says (*Pyth.* iii. 91-95):

... τοὺς μὲν μαλακαῖς
ἐπαιοδαῖς ἀμύμων,
τοὺς δὲ προσηνέας, πί-
νοντας, ἢ γυνίους περάπτων πάντοθεν
φάρμακα, τοὺς δὲ ταμαῖς ἐστασεν ὀρθαύς.

As Pindar gives the first place to *epaoidal*, so the Avesta esteems the cure by prayer or conjuration the best of all; so that the prayer-physician (*manthro-baeshaza*) is called 'the physician of physicians.' In fact, the *Manthra Spenta*, or sacred formula, is personified and invoked as a genius: 'Heal me, O *Manthra Spenta*, O brilliant one!' It is Ahura Mazda himself who speaks, and promises thousands of camels, oxen, and sheep (*Vend.* xxii. 7-10). This *manthra* is not prayer in our sense, but a conjuratory formula, as employed so often among Eastern peoples. Homer, too, shows it as employed together with surgical treatment:

ᾠτελλὴν δ' Ὀδυσσεὺς ἀμύμονος, ἀντιθέοιο,
ᾗσαν ἐπισταμένως· ἐπαιοῖδ' δ' αἶμα κελευδὸν
ἐσχεθόν (*Od.* xix. 456-8).

There is an excellent specimen of these conjuratory formulæ in *Vend.* xx. 7: 'I conjure thee, disease! I conjure thee, death! I conjure thee, burning! I conjure thee, fever! I conjure thee, headache! . . . I conjure thee, smallpox (?)!' There is a striking analogy between these conjurations and those employed by the Akkadians (Lenormant, *Chaldean Magic*, Eng. tr., 1877, pp. 4, 20, 260). These formulæ, as with the Greeks and Hindus, may, like so many other elements in the Avesta, be derived from an earlier population (perhaps Turanian) absorbed by the Aryans.¹ The genius of metals, Khshathra Vairya, is said to have given the first physician, Thritha, a knife with a golden point for surgical operations (cf. *Vend.* xx. 3). Careful instructions are given for the training and examination of surgeons and physicians, based on the principle of *experimentum in corpore vili*. The candidate is to practise, not on a Mazdæan, but on a *daēva*-worshipper, that is, the follower of any other religion. Should he operate upon one such with fatal result, and again a second and a third time, he is declared incapable for ever of practising either medicine or surgery. Should he persevere and injure a Mazdæan, he is held guilty of a crime equivalent to homicide. After three successful experiments, however, he is considered a fully qualified medical man (*Vend.* vii. 95-104). A serious view was taken of a physician's duties: he must make all speed to visit his patients; if the disease attack one at nightfall, he must hasten to arrive by the second watch; if at the second watch, he must arrive by midnight; if during the night, then by daybreak (*Vend.* xxi. 9-11). The fees of the physician are minutely regulated according to the rank of the patient. A priest pays only by liturgical prayers and blessings. The payment for the various chiefs of a household, a village, a clan, or a province, are respectively an ass, a horse, a camel, and a yoke of four horses; whilst, for the wives, female animals corresponding are required. It would appear that later on these fees were changed into monetary payments: the Pahlavi commentator estimates the prayers paid by the priest at 3000 *stirs* (Gr. *στανίρ*), whilst the yoke of four horses is valued at 70 *stirs*. It may be remarked that the Avestan physician was also a veterinary surgeon, for a scale of charges is also fixed for the treatment of cattle, great and small (*Vend.* vii. 105-117), and it is distinctly said that the same means must be employed for the cure of a rabid dog as for one of the faithful (*ib.* xiii. 97-99).

Turning now to the later Pahlavi literature, we find the whole subject of the art of medicine most fully and systematically treated in an interesting tractate incorporated in that encyclopædic work, the *Dinkart*, and forming ch. 157 of bk. iii. printed in vol. iv. of Peshotan's edition (Bombay, 11 vols., 1874-1910). It is by far the most considerable chapter of the whole work. It falls into

¹ An amusing remark by a more recent Parsi commentator quoted by Darmesteter (note to *Vend.* vii. 120) is thus naively expressed: 'He may not cure, but he will do no harm!'

four distinct parts: (1) medicine, (2) the medical man, (3) diseases, (4) remedies.

It is curious to remark that Hindu medical science also distinguished the 'four feet' (*pāda*) of medicine, which, however, were reckoned as: the physician, disease, medicine, the nurse; while Hippocrates has a threefold division: ἡ τέχνη διὰ τριῶν, τὸ νόσους, ὁ νοσῶν, καὶ ὁ ἰσθρῶν (*de Morb. Vulg.* i. 1).

The author begins by defining the basis or foundation (*bān*) and the necessity of medicine, which is, of course, owing to the action of the Evil Spirit. He next distinguishes between spiritual and material medicine, and again between general and individual medicine—the former apparently applying to the maintenance of the public health, and the latter to that of individual patients. It is curious that, whilst on the whole following the medical system of the Avesta as above described, the *Dinkart* recognizes *five*, instead of three, means of healing, viz. formulae, fire, herbs, acids, and the knife. Another interesting distinction is that of prophylactic medicine (or hygiene, as we should say) for the preservation of health, and curative medicine for the healing of disease. In accordance with this, two kinds of practitioners are also distinguished: the *drūstopat*, 'master of health' (as we might say, officer of health), and the *bijishak*, 'healer,' or doctor. In the section specially devoted to the physician several questions are treated. The supreme chief of corporal medicine is the Sovereign (*i.e.* the king); of spiritual medicine, the *Zarathustrōtema*, or supreme high priest. The matter (*māto*) on which the physician exercises his art is defined to be, for the spiritual physician, the human soul endowed with a body; for the corporal physician, the human body endowed with a soul. The reciprocal action of body and soul is then discussed with considerable skill, and corresponds pretty much with our idea of *mens sana in corpore sano*. The description of a perfect physician of the body is worth quoting:

'He should know the limbs of the body, their articulations; remedies for the disease; should possess his own carriage and an assistant; should be amiable, without jealousy, gentle in word, free from haughtiness; an enemy to disease, but the friend of the sick; respecting modesty, free from crime, from injury, from violence; expeditious; the right hand of the widow; noble in action; protecting good reputation; not acting for gain, but for a spiritual reward; ready to listen; having become a physician by favour of Aryaman; possessed of authority and philanthropy; skilled to prepare health-giving plants medically, in order to deliver the body from disease, to expel corruption and impurity; to further peace and multiply the delights of life' (§ 19).

The regulations for the probation of the medical candidate are the same as those we have quoted from the Avesta, whilst, as for fees, the treatise simply refers to the sacred text. In the third part we meet the statement that there are two fundamental maladies, denominated *faraēbūt* and *airibūt*, which seem to indicate rather some forms of moral evil, but their explanation is extremely obscure, although the words occur in several treatises. The Evil Spirit (*Ganāk Mīndi*) is the cause of all evils, both of soul and body—for the former, of every kind of vice and evil passion; for the latter, of cold, dryness, evil odour, corruption, hunger, thirst, old age, pain, 'and all other causes of malady and death.' The number of diseases is given as 4333; their names are simply those of the Avesta in a slightly altered form. One interesting division of maladies is that which divides corporal diseases into voluntary (such as venereal disease) and involuntary (such as fevers); whilst the diseases of the vital principle (*jano*) are distinguished as vices tending forward (*e.g.* passion and anger) and those tending backward (*e.g.* idleness).

The fourth and last part of the treatise may be styled therapeutic. The number of remedies derived from the vegetable kingdom is said to be seventy, and they are divided again into those which are by nature beneficent, and those which of their nature are poisons, but may be so treated as

to become medicinal. As an example of the former is given the myrobalan of Cabul—the only plant which is mentioned. The miraculous (*rajdato*) trees, the *Gōkart* and the white *Hōm*—here clearly distinguished from one another—are referred to as sources of healing. Health is next divided into two kinds—health of the soul and health of the body; and the various oppositions between the powers of the former and certain vices co-existent and yet hostile are detailed at length. In the whole passage we have a well-sustained distinction between the *hamēstarik* (diametrically opposed, contradictory, excluding the opposite) and the *brātartavato* (co-existent but hostile); and the passage entirely confirms the sense of this latter difficult word which the present writer propounded in the *Academy*, xxvi. [1884] 397. A similar distinction is then made between the elements of the body and the hostile forces, cold and dryness, produced by the Evil Spirit—a veritable *bellum intestinum* between the four elementary qualities as described by Galen and other early medical writers. Curiously enough, however, with the Iranians the position of dryness and moisture is reversed, dryness and cold being together reckoned among evil qualities—an inversion, no doubt, to be explained by the rarity and consequent vast importance of humidity in ancient Iran. The action of the blood, of food, and of moderation are next explained, as well as the necessary interdependence of spiritual and corporal medicine.

An interesting question is that of the relations between Iranian medicine and that of India and Greece. The researches of Haas (*ZDMG* xxx., xxxi.) and Müller (*ib.* xxxiv.) have conclusively shown the great influence exercised by Greek medicine on the Hindus, and a question of the latter writer deserves our attention here:

'A fact which concerns not Indianists, but rather students of Middle-Persian and Arabic literature, is this—it may be deduced from the Arabic texts that it is worth while inquiring by what road Indian medical literature reached the Muhammadans. We know that Indian tales reached the realms of the Chahlis through the Pahlavi: is it not therefore obvious to suppose the same road for medical science?' (see also J. Jolly, 'Medicin,' *GIAP* iii. 10, pp. 17-19).

We have indicated above certain parallelisms between Iranian medical theories and those of the Greeks, though none of them can be considered very decided. History, however, bears out the probability of such influence of Greek medicine upon Persian. Greek physicians are to be found at all epochs at the courts of Iranian sovereigns. Such was the case even under the Achæmenians: we need cite only Demokedes under Darius I., the famous Ctesias, and Apollonides mentioned by the latter. Spiegel thinks it probable that in populous cities foreign physicians often competed with native ones. Under the Sasanians, too, we find Greek physicians at the royal court, and Spiegel is of opinion that Indian physicians made their way there also (*Eran. Alterth.*, Leipzig, 1878, iii. 582).

LITERATURE.—W. Geiger, *Ostirān. Kultur im Altertum*, Erlangen, 1882, pp. 391-399; L. C. Casartelli, *Traité de médecine mazdéenne traduit du Pehlvi et commenté*, Louvain, 1886, also *La Philosophie religieuse du mazdéisme sous les Sassanides*, Louvain, 1884 (Eng. tr., Bombay, 1889); S. E. Dubash, *The Zoroastrian Sanitary Code*, Bombay, 1906—a skilful attempt, by a highly qualified Parsi medical man, to bring the Avestan medical and hygienic system into correlation with modern European medical science, and 'to show my educated co-religionists how well the laws of the Vendidad, enacted for the preservation of health and for the observance of the purity of things, are in harmony with the laws of hygiene and the principles of the science of medicine.'

L. C. CASARTELLI.

DISEASE AND MEDICINE (Teutonic).—
1. Disease.—Nothing made so powerful an impression upon the feelings of primitive man as the phenomena of disease and death. Whether the end came as the inevitable result of a prolonged

struggle, or whether it befell with startling suddenness in the heyday of life—in either case the terror-stricken mind was forced to face the question as to the cause and origin of the dread occurrence.

Death from loss of blood and death by strangulation were of course more or less familiar incidents of the chase and of war. But what mysterious power was it that suddenly opened the veins within the body, and brought a comrade's life to an end by hæmorrhage; or, again, obstructed the air-passages from within, and thus caused the hale and hearty youth to perish by suffocation, convulsively clutching at his throat? The inmates of the smoky turf-cabin had often felt this malign power at work, as it squatted—crushing and squeezing—on breast and throat, and had awaked with screams of terror and bathed in perspiration: it was the dreaded *alp* (incubus, nightmare), who had all but strangled them to death. By night likewise they were seized by that frightful something which resides in the body permanently, and thus differs from the *alp* that comes by night, or even in the midday slumber, yet speedily withdraws again. The unwelcome visitations of the incubus must have made a profound impression on their victims; and it was an experience of similar character which now and again befell them in spring, when the storm was raging outside, and alternate chills and burnings seized them, causing the shiver of fever, tormenting them in sleep with wildly-rushing dreams, and at length bringing them in their delirium to the experience of things which, as their house-mates affirmed, no one else had perceived: the fell work, surely, of gruesome creatures, invisible, but to feeling all too real, which hemmed them in, prowled after them, fell upon them like stealthy foes—the spirits and demons of disease, which the causal instinct, with its unconsciously creative tendency and its power of stimulating the imagination, depicted in endlessly varied forms, corresponding to the observed phenomena accompanying the affliction. A special object of misgiving was the unseen, though living and potent, entity which dwelt in friend and foe alike, which passed from the body at death and left it behind, *i.e.* the soul, as primitive man was always obsessed by the suspicion that departed souls still pursued their friendly or hostile activities in the shadowy host of disease-spirits.

Among the Teutons the souls of the dead were believed to join the great demonic host which, comprising elves, 'mares,' *Truden*, *Schräte*, and trolls, swept along in the train of Woden and Holla: winged creatures who appeared everywhere, and had their home in the savage forest. On occasion the disease-demons assumed bodily shape, showing themselves in every variety of form, and appearing in the disease itself as worm-like threads that creep under the skin, or as actual worms living in wounds and sores, or being discharged therefrom. The idea of the wriggling worm as the embodiment of the disease-demon was widely current among the Teutons. The demon was supposed to emerge from the worm in the form of some winged being, or of an ugly, crawling, slimy toad.

Next in importance to the incubi, or spirits of the dead, who afflicted the survivors with horrible nightmares, or consorted with them lasciviously in dreams, and who, in the form of some animal, often forced their way to the fireside through holes and cracks (cf. O.N. *mara kvalði*, 'the torment of the mare,' *mara trað*, also *cauche-mar* [*cauche*, from Lat. *calcare*, 'to tread'], 'the walk of the mare'), it was the horde of *alps*—creatures fabricated by the imagination from the nightmare—the *Elben*, the race of elves (A.S. *ælf-cynn*), who, as

noxious demons practised their wicked magic (A.S. *ælf-siden*) upon mankind, especially in attacks of fever. They were the personal causes of the so-called elf-disease, which injures mankind as 'elf-shot' (A.S. *ylfa gescot*, O.N. *alfskud*, Danish *elver-skud*), striking the skin (A.S. *on fell scoten*), the flesh (*on flæse scoten*), the blood (*on blod scoten*), or the limbs and joints (*on lid scoten*); or as the less injurious elf-breath, which, when merely blown (O.N. *alvgust*, A.S. *elfblæst*, Swed. *elfveblast*) upon human beings, caused a swelling of the limbs; or even as a voracious sucking (A.S. *ælf-sogopa*) of blood or marrow or bone; or as some other vagrant affliction (O.N. *alfa-volkum*, 'elf-roll,' cf. 'walk') which falls upon a person in its flight. When a man fell a victim to such an 'onfall' (A.S. *on-feall*), his neighbours said 'the elves are upon him.'

Besides these, however, there were numerous other noxious spirits ill-affected towards mankind, as may be inferred from the personal cast of many of the ancient names applied to particular diseases, as, *e.g.*, *Nessia*, *Nagedo*, *Stechedo*, *Troppho*, *Crampho*. Touching-demons caused dysentery, lymphangitis, and anthrax; stroking-demons (cf. 'moon-struck'), face paralysis and mental derangement; burning-demons, blisters and gangrene; biting, pinching, scratching, and bruising-demons, skin-affection like cancer, extravasation of blood, itch, freckles, or phlegmonous inflammation, but they could also affect the body internally, and give rise to ulcers in the stomach (O.H.G. *magobizado*). As tearing-demons they produced gnawing pains in nerves and muscles; as striking-demons they afflicted men with apoplexy and epilepsy, with blindness and mumps; as pushing-demons they brought on hiccup, and the *nösch*, which presses upon the heart and the womb; as pricking-demons they were the cause of pneumonia and pleurisy, with their accompanying pains in the side, and also of sunstroke; as choking-demons they caused disorders which constrict the throat (croup, diphtheria); as binding-demons, rickets and phimosis; as gripping-demons (*hardgreip*, *widgreip*), the swoonings and spasms of uræmia, eclampsia, and epilepsy; as blowing-demons, disorders of the eyes (especially blennorrhœa in the newly born) and the blisters of anthrax, as also smallpox and plague, though these, no doubt, were sometimes figured as dragons and griffins rushing hither and thither, and killing people with the poisonous fumes they exhaled.

Human beings were also exposed to the aggressions of certain repulsive creatures of diminutive size, such as the *dwarfs*, who caused monstrous births, local paralysis, lunacy, mumps, and similar diseases (*e.g.* idiocy, apoplexy, herpes), produced convulsions, molested people at night by crushing and stifling, and, in particular, brought about baneful fevers (thus A.S. *dweorg* practically means an attack of fever). Evil-disposed demonic *Schelme* (cf. Scot. 'skellum') smote man and beast with pestilence, conveying influenza (O.H.G. *skalmo*, *skelma*) and the 'black death' in fetid effluvia—an idea which reveals a glimmering sense of the danger of infection, as does also the notion of the 'Schelmenbeine' in starveling cattle, the 'Pest-schelme' being supposed to take material shape in these.

Demons of disease dwelling in forests were also regarded as the less noxious *Schräte* (goblins) and *wights*, and were personified as *Düsel* (stupors), or as 'yellow hags,' yellow-bellied *Sälden*, who knit yellow vestments with yellow needles—the yellow smock-frocks which they throw over the bodies of their victims as jaundice (*Gelbsucht*), or as red skin (*Pellmergen*) in erysipelas, or as tumid skin (*Schwellmergen*) in local dropsy. This idea, as implying the personification of local affections, reveals a some-

what more advanced conception of disease, which must have coexisted from the outset with the demonistic view, the latter applying more particularly to acute and chronic infectious diseases, and the whole brood of 'nervous' disorders. The demonistic view of disease has a direct link of connexion with the NT conception of demons in the Gothic word *dǫmǫnareis*, and at length culminates in the mediæval theory of possession by devils (A.S. *deofolsēoc* and *deofolsēocnes*).

2. Medicine.—In the practice of healing, likewise, a simple empiricism no doubt prevailed among the ancient Teutons from the first, though naturally the evidence of this fact has almost entirely disappeared. But this experimental therapeutics became almost inseparably combined with demonistic conceptions and modes of thought.

A wound was first of all cleansed and bound up with vulnerary herbs. If the bleeding was profuse, the sore was sprinkled with the dust of dried plants, and the bandage was tightened. But, as this did not always prove effective, recourse was had to the 'more potent' remedies—of which we shall speak below—as preventives, and this mode of treatment was presently applied in all cases and 'for all cases'; i.e. it became customary to use such remedies at the very beginning of the treatment, as unexpected and apparently causeless contingencies might supervene in the process of healing—complications as mysterious as they were dangerous, such as inflammation, erysipelas, diphtheria, hospital gangrene, and lock-jaw; in short, all those concomitants of bodily injuries which are now traced to infection. These unwelcome manifestations were regarded as 'gruesome companions,' the personified influences of malicious denizens of the world of spirits and demons, though they might also be due to the machinations of evil-disposed human beings who were able to move the demonic realm and make it subservient to their will. Moreover, there was always the possibility that the invalid had in some respect neglected the claims of religion. He might have fallen short in performance of his duties towards the friendly deities of his people, so that they had sent the injury as a punishment, or had given to the wicked elves, whom they generally held in check, that permission to work injury of which they so fiercely availed themselves. For all such possibilities timely and rapid measures had to be taken. Horror lowered upon primitive man from all sides, and it was the part of wise counsellors—both men and women, but, in all that related to disease, more especially women—to soothe the terror-haunted soul.

Diseases of supernatural origin, and, in fact, all painful things that could not be traced forthwith to sensible causes, might be Divine punishments, from which the sufferer could be absolved only by expiation—by the bloody or unbloody sacrifice. The sacrificing priest secured his people against the demons of plague. Odin himself, however, is the master-magician, the 'magic-father' (O.N. *galdro-father*); as the sun-god he scatters the nocturnal swarm of the 'night-goers' (*nihtgenga*); he is the mighty elf-dispeller, the scourge of the *alps* (*græti alfa*). Nevertheless, it was also the custom to offer sacrifice to the *alps* themselves (*alfablot*), who were often well-affected towards men, and had some knowledge of the plants that must be dug on moonless nights. The cult of Eir, the special goddess of healing, is of relatively late origin; she was the personification of the gentle hand of woman in nursing the sick (O.N. *eira*, 'to care for,' 'nurse'). But Odin still held his place as the supreme god of healing, and the healing 'touch' of 'Wodan's finger' was long the prerogative of English and Frankish kings—de-

scendants of Odin—as a cure for scrofula and struma ('king's evil'). At an earlier date the power of curing disease was ascribed to the god Thor, the great preserver in times of sickness and danger, the destroyer of evil spirits. But Odin the Wise knew all the secrets of the magic which counteracts the work of demons: 'succouring oracles of healing' (*Hávamál*, 11, 9), 'long, powerful runes of life' (*Rigspula*, 44), 'succouring staffs and protective runes' (*Sigrdrifumál*, 5 and 9), and 'staffs full of healing virtue' (*Hávamál*, 145).

Here we come upon the most important element in the healing magic directed against the demons of disease, viz. the *spell*, which was inscribed on rods, pieces of bark, or the skin, as, e.g., the hand, of the invalid, and which might be whispered, spoken, chanted, or shouted. All the ancient Teutonic languages furnish numerous examples of such spells or charms—more especially formulæ for the healing of wounds, the stanching of blood, and the prevention of swelling and mortification. Thus, Hartmann von Aue tells how, after a wound had been bandaged, Gawan, faithful to ancient Teutonic custom, uttered the spell: 'Zer wunden wundensegen.' Again and again in the 'blood-charms' we find the phrases: 'stant plot fasto,' 'verstand dû, bluotrinna.' Nor are other possible contingencies forgotten; thus 'dyn stekent, dyn swillent, dyn killent, dyn vulent, dyn stinkent, dyn swerent, dyn rennent sholt laten'—a spell which calls for uninterrupted convalescence. But the folk-medicine of the ancient Teutons comprised similar spells for many other ailments. Thus we find charms for worms, designed to expel the *nesso* (worm) with *niun nessimhlinon* ('nine little worms') from the marrow, through veins, flesh, and skin, and so out of the body;¹ or to kill it, or cause it to drop from the sore in the form of maggots. There were also fever-charms, used for destroying or expelling 'ritten'; charms for fracture and dislocation, spoken while the injured limb was being stroked or rubbed, and supposed to help the disconnected bones to reunite; charms for the eye, which arrested runnings, swelling, pain and dimness in that organ; charms for convulsions, curing epilepsy, 'wild shot,' gout, obstruction of bowels, colic (*bermuoter*), 'cold pains,' and 'irregular' gout; charms for consumption, curing all forms of wasting disease; charms for swelling, which removed intumescences (e.g. wens) and swollen glands (*kyrrill*); charms for the teeth, which destroyed the worms of toothache and caries; birth-charms, which were uttered before the knees of a woman in labour, and helped to usher the child safely into the world and bring away the afterbirth (as, e.g., in the *Edda*, they were 'sung vigorously' for Börgny by Oddrún, supported by the birth-runes 'painted on hands and joint-bandages' as 'health-marks').

Sometimes the expedients employed took the form of slips of bast inscribed with formulæ similar to the foregoing (*zouborgiscrib*), and suspended in little boxes (*plechir*) around the invalid, or bound upon the diseased part (*ligatura*); while they were also used as prophylactics, as amulets for the 'breaking of sickness.' But charms were likewise of avail for the transference of diseases to another place, and for conveying them to animals and trees ('branch-runes,' 'which must be learned by any one who would be a physician,' [*Edda*]). Charms were spoken or chanted in gathering medicinal and magical herbs, in making decoctions, and in other proceedings, such as passing or creeping through split trees; they were uttered over an unconscious invalid, or while a

¹ Cf. the celebrated O.H.G. 'Munich worm-charm,' which will be given in full in the art. Magic (Teutonic).

rune-embellished gold ring was being moved in a circle round his wound; probably also when an iron or bronze ring was fixed round a limb as a prophylactic against demons, and even in jumping through the solstitial fire, the smoke of which the leaper tried to catch and retain in his clothes as a protection against fever.

The practical parts of these various expedients, and many other actions of the same kind, were, no doubt, frequently—perhaps more frequently—employed without spells, the place of the latter being gradually taken by new manipulations, articles of clothing, and other paraphernalia, e.g. wooden masks, hats, cloaks, bags with the most fantastic contents, such as talons, claws, nails, hair, small bones and similar trumpery—the stock-in-trade of the witch-doctor (shaman, medicine-man) all over the world. Such objects as images of the gods were dipped in water in order to endow it with special remedial virtues; cakes were baked in the form of the powers of healing, and then eaten; wooden arms and legs were hung up in temples or groves as votive offerings, while magic stones, with or without runic writing (stones of life), were worn as amulets.

Such were the 'medical' ideas, practices, and devices by which the ancient Teutons sought to cure existing disorders and to secure themselves against possible injuries to health. But even those remedial measures which might at first sight seem to be purely natural were in many cases conjoined with a superstitious element. Thus, when applying a rolling massage to the abdomen for troubles in that region, the 'doctor' would have in his hand a beetle or some such creature, into which the disease, or the demon causing it, was supposed to pass; while, in trying to dislodge the demons of pain from certain parts of the body by fumigating them with the incense of narcotic herbs, the operator softly uttered a spell, or chanted a magic verse. The demonistic theory of disease was itself of empirical origin. Even here a slight though real element of fact underlies all that is merely fanciful, and it was only as a secondary phase that it unfolded that riotous luxuriance which took shape finally as an imaginary host of disease-demons encompassing mankind. These demons were the outcome of what might be called observation of pathological symptoms, which found its materials in all manner of deformities in men and animals; such deformities, again, adding fresh matter to the ideas born of the nightmare, and constantly confirming them by apparently positive evidence—just as the intestinal or external parasite seemed to corroborate the personifying animistic theory of disease. The parasitical theory of disease is thus intimately related to the demonistic.

The anti-demonic incantation was usually regarded as appertaining specially to the individual, who used it to protect himself against, or deliver himself from, some particular demon; while the bloody sacrifice performed by the tribal priest was designed to guard the whole tribe against surprise attacks by the host of disease-spirits. But we also find incantations of an almost general character used as safeguards against possible onsets of demons—against 'whatever elf it may be' (*sy þæt ylfa þe him sie*). All conceivable combinations of the supernaturalistic therapeutics of magic and the physico-chemical therapeutics of manipulation and pharmacy have been evolved in the course of centuries, nor can it even yet be said that, in the folk-medicine of the Teutons or other races, the purely natural standpoint has finally carried the day.

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DISEASE AND MEDICINE (Vedic).—Limitation of the subject.—The distinction between charms for the cure of disease (*bhaiṣajyāni*) and other charms is frequently evanescent. They approach with special closeness the charms to secure long life (*āyusyaṇi*, cf. MAGIC [Vedic]) on the one hand, and the charms of exorcism (cf. WITCHCRAFT [Vedic]) on the other. Moreover, charms for easy childbirth, for abortion, and for the promotion or destruction of virility might properly be classed among them, but are in fact classed regularly among the rites pertaining to women (*stri-karmāni*, cf. MAGIC [Vedic]). Instead of attempting any theoretic distinction, it seems best to follow the Hindu classification, and treat in this article only charms of the type contained in the *bhaiṣajya*-chapters (xxv.-xxxii.) of the *Kaṣika Sūtra*, reserving the related charms for the articles cited above.

1. Sources.—The chief source for our knowledge of the beliefs relating to disease in Vedic times and of the practices based upon them is the Atharvaveda. Of hymns or parts of hymns intended to secure the cure of more or less sharply defined diseases, the Atharvan *Samhitā* contains something over a hundred. The practices by which these were at one time accompanied are given in the *bhaiṣajya*-chapters of the *Kaṣika Sūtra*.

It cannot, of course, be always confidently asserted that the practices there described are identical with those employed when the hymns were composed. But that the statements of the ritual are, in the main, based upon a good understanding of the hymns is shown by the flood of light that the study of the ritual has thrown upon the interpretation of the hymns (cf. the history of their interpretation which is given in the Commentary to pages 1-48 of Bloomfield's 'Hymns of the Atharva-veda,' *SBE*, vol. xlii.). That the treatment of the hymn in the ritual is secondary is sometimes too hastily assumed. Thus vi. 44 is clearly a charm against *asrāva* (diarrhoea) and *vātikāra* (production of wind in the intestines), but *Kaṣika* xxxi. 6 is supposed to rubricate it in a remedial rite against slander. The position of the rite in the *Kaṣika* shows that it is intended for the cure of some disease, and, if the commentator is right (as he most probably is) in saying that it is to be employed 'in case of slander,' this means only that the origin of the disease *vātikāra* is ascribed to the evil speech of an enemy (cf. below, for disease originating from curses, evil eye, and sorcery)—a naive, but not improbable, conception. On the other hand, both the materia medica of the *Kaṣika* and its therapeutic practices—eight as these are—seem more advanced than those of the *Samhitā* itself. In some cases also the connexion between the rite and the hymn is so superficial that there can be no doubt of the secondary mechanical adaptation of the one to the other. In such cases it is usual to assume that the rite has been made to fit the charm. In view, however, of the great conservatism that in general controls such practices, and the probable pre-historic origin of certain Atharvan charms (cf. Bloomfield, 'The Atharva Veda,' p. 61, and the literature there cited), the opposite possibility deserves more consideration. In the present state of Vedic studies, at all events, we can seldom hope to do better than understand an Atharvan hymn as the *Kaṣika* understood it.

Taken together, the two sources furnish a better

picture of primitive medicine than has been preserved in any literature of so early a period. Further interest is added to the subject by the fact that these medical charms are the germ from which the later Hindu medicine was evolved. The stage of its development represented in the medical *Sāstras* implies several centuries of evolution from the standpoint of the *Kaushika*, and is now known (through the discovery of the Bower MS.) to have been attained previous to the 5th cent. of our era. The relation of the later medicine to the Atharva is recognized by the Hindus themselves, who regard the Yajurveda as an 'after-Veda' (*upaveda*) of the Atharva. Hindu medicine in turn has, through the Arabs, left its effect upon European medicine.

Other Vedic texts, owing to the purpose of their composition, do not have occasion to handle the phenomena of disease in the same concrete fashion, and to the same extent. Apart from the addition of details of a similar nature, their chief contribution consists in a picture of the general attitude of their authors and users towards disease. Into this picture as a background the details of the Atharva fit with perfect harmony. The difference between the literary texts (the Rigveda in particular) and the Atharva is neither a difference in time, nor a difference in enlightenment between the adherents of these Vedas. It is rather the difference in attitude of the priest and the physician (each liberal enough to employ on occasion the resources of the other) when brought face to face with disease.

2. The Atharvan practice of medicine.—(1) *Knowledge of anatomy*.—The Atharva evinces a very thorough knowledge of what may be called the coarser anatomy of the human body, naming its various external subdivisions, and many of its internal organs. Thus ii. 33 is a long list of the parts of the body from which the disease is to be torn; similar lists occur also in ix. 8, x. 2, and xi. 8. Beyond this knowledge, which was to a great extent a pre-historic acquisition (cf. O. Schrader, *Reallex. d. indogerm. Altertumskunde*, 1901, s.v. 'Körperteile'), the Atharva can hardly be said to go. The apparent distinction between veins and arteries in i. 17. 3 is offset by the occurrence of the same words in vii. 35. 2, with the more general sense of 'internal canals,' meaning entrails, vagina, etc.—showing how vague were the ideas held with regard to such subjects. The isolated statement of ix. 8. 10, 'what is diseased shall become urine,' may be mentioned as an accidental approximation to a partial truth. To be noted, however, is the fact that the Hindu theory of the constitution of the body of three elements—bile, phlegm, and wind—does not appear in the early Atharvan texts. *Vāṭikṛtānāsanī* of vi. 44. 3 cannot be urged as proof to the contrary, as it means, not 'destructive of (diseases) produced by the wind in the body' (*vāṭakṛtānāsanī*), but 'destructive of that which has been made into wind.' Evidently, from its association with diarrhoea, it refers to wind in the intestines. The later theory, which appears first in the *Svapnādhyāya*, Atharv. Par. 68, is, of course, familiar to the commentators, who endeavour to foist it upon the *Kaushika*.

(2) *Theory of the origin of disease*.—The popular mind is ever ready to see in disease the manifestation of the will of a supernatural power. To the Atharvan this power was generally one of the hosts of demons by which he believed himself surrounded. How slight was the distinction made between disease and possession may be seen from a hymn like Atharv. ii. 4, which is directed against disease and demon alike. Compare also v. 23. 2, where Indra is invoked to destroy the worms in a child, and it is immediately declared

that all the *arāti* (certain female demons) are slain. It is also clearly implied by the fact that the *Kaushika* contains, among its remedial practices, ceremonies which consist merely in the driving away of the demons that are causing the disease (cf. xxv. 22-36, xxxi. 3-4); in providing the patient with an amulet to resist their attacks (xxvi. 26 f., xxvii. 5 f., xxviii. 7); or in spells to dissipate and remove the harm they have done (xxvi. 29-32, xxviii. 9-11).

These demons of disease are generally vague in outline and indefinite in number, and are known by the names *piśācha*, *rakṣas*, *atrin*, and *kaṇva*. Of their various pernicious activities, it may be noted that the *piśācha* devour the flesh of their victims (Atharv. iv. 36. 3, v. 29. 5); the etymology of *atrin* points in the same direction, while the *kaṇva* prey especially upon the embryo (ii. 25. 3). Other unnamed demons (*ib.*) are suckers of blood and takers away of fatness, while in xix. 36. 6 figure the dog-like she-demons that recall the dog-demon of epilepsy (*Apastambīya Gṛhya Sūtra*, xviii. 1) and the dog-like *gandharvas* of Atharv. iv. 37. 11. Another class of beings to whose influences diseases are ascribed are the *gandharvas* and their consorts the 'mind-bewildering' *apsaras* (cf. Atharv. ii. 2. 5, iv. 37, xix. 36. 6). Insanity in particular is ascribed to their influence (cf. vi. 111. 4, also Rigveda x. 11. 2; Pischel, *Vedische Studien*, i. [1889] 188, and the statement of *Tāittiriya Samhitā*, iii. 4. 8. 4: 'The *gandharvas* and *apsaras* render mad him that is mad'). The *rakṣas*, too (Atharv. vi. 111. 3), can steal away one's senses. In Atharv. v. 29. 6 f. is indicated one way in which the demons obtain possession of their victim—by entering him with his food. It is with this possibility in view that *Kaushika* xxvii. 10 orders as a hygienic precaution that the sacks of grain belonging to the sick man shall be surrounded with a ring of heated pebbles. As the Atharva makes but slight distinction between demon and human sorcerer, it is not surprising to find the latter causing disease (Atharv. i. 28, iv. 28, xix. 39. 1) or diseases attributed to magic (iii. 7. 6; for methods of thus producing disease, cf. art. WITCHCRAFT [Vedic]), curses, or the evil eye (ii. 7, v. 15 and 16, vi. 96. 2, xix. 35. 3, and *Kaush.* xxvii. 35, xxix. 15-17).

Theoretically the diseases themselves are demons, and in some cases, e.g. *viṣkandha* and *sainṣkandha*, it is impossible to decide whether the word should be considered the name of a demon or of a disease. But the personality of disease-demons is rarely strongly marked, and none of them is exactly comparable with the later smallpox goddess *Sitalā*. The closest approach is to be found in *takman* (fever), the Atharvan name for the disease known to the later medicine as *ṣvara* (cf. esp. the hymn v. 22, in which he is adjured to go elsewhere; and i. 25, vi. 20, and vii. 116, in which he is offered homage). Certain scrofulous sores called *apachit* are supposed to move of their own volition, as they fly through the air and settle upon their victim. So much is this the case, that earlier interpreters understood the word as the name of a noxious insect. As in other popular systems of medicine (cf. A. Kuhn, in *Kuhn's Zeitschrift*, xiii. 49 ff. and 113 ff.), a number of diseases are ascribed to the presence of worms (practically a form of demon [cf. above]) located in various parts of the body, and most fantastically described (cf. Atharv. ii. 31 and 32, v. 23, with numerous parallels in other texts to be cited below).

Less frequently the Atharva ascribes a disease to one of the greater gods, and then often as a punishment for sin. Varuna sends dropsy to punish crime, especially falsehood (cf. Atharv. i. 10. 1-4, ii. 10. 1, iv. 16. 7, vii. 83. 1-4, xix. 44. 8; once also, i. 25. 3, the *takman* is said to be his son

[i.e. sent by him], and in vi. 96. 2 [a charm employed by *Kausika* to heal the dropsy, but probably originally of a wider scope] the prayer is to be 'freed from the toils of Varuṇa, the foot-fetter of Yama [Death], and every sin against the gods'. Certain sharp pains are ascribed to the spear of Rudra (*Kaus.* xxxi. 7); the arrow of the same god causes tumours (Atharv. vi. 57); the *takman* and the *kāśikā* (cough) are his weapons (xi. 2. 22), and in xi. 2. 26 he is said to send the *takman*. A ceremony to his children, the Maruts (*Kaus.* xxvi. 24), serves as a cure for leprosy. Diarrhoea is connected in i. 2 with the arrows of Parjanya (the rain-god), and lightning (Agni) is regarded in i. 12 as productive of fever, headache, and cough. Takṣaka, a serpent-god, is worshipped in *Kaus.* xxviii. 1, xxix. 1, xxiii. 20 (charms to cure the bites of poisonous reptiles).

The supposed hereditary nature of some disease seems implied in the name *kṣetriya* (the interpretation is disputed), but even it has demons that produce it. Finally, the *sami*-tree is supposed to have some evil influence on the hair (cf. Atharv. vi. 30. 2f., and *Kaus.* xxxi. 1).

(3) *The diseases treated.*—The identification of the diseases treated in the Atharva is difficult in the extreme. In the first place, there is nothing that can be called diagnosis in our sense of the term. The practitioner is concerned merely with the troublesome symptom; of the cause of the symptom, the disease itself, he knows nothing. Sometimes the symptom, e.g. *jālodara* ('water-belly'), is definite enough to enable us to identify the disease; more frequently it is not, e.g. the terms *apachit* ('sores') and *akṣata* ('tumours') must have covered a great variety of afflictions from the most harmless to the most malignant. In the next place, the *Kausika*, as a rule, does not state the disease for which its charms are intended. This important item is left to be inferred from the hymn rubricated. Unfortunately the hymns often combine the most varied diseases; extreme instances may be found in ii. 33, ix. 8.

The commentators (of much later date) endeavour to supply this deficiency. Their statements, however, are not only frequently contradictory, but are also evidently affected by their knowledge of the later Hindu medicine. As an example of the way they work may be taken Keśava's statement that *Kaus.* xxx. 13 is a cure for dropsy, heart-disease, and jaundice. Both the ritual and the hymn rubricated (vi. 24) are plainly concerned primarily with dropsy; this disease is frequently complicated with heart-disease, which is, therefore, mentioned in the hymn. But in i. 22 (a cure for jaundice) heart-disease is also incidentally mentioned. Keśava seems to have reasoned that, since the cure for jaundice (i. 22) cured heart-disease, therefore another cure for heart-disease (vi. 24) must also cure jaundice! Finally, there are many obscure terms both in the *Saṁhitā* and in the *Sūtra*.

The most dreaded disease was the 'fever' especially predominant in the autumn (*viśvaśārada*). Its later name *jvara* does not occur in the Atharva, where it is known as *takman*, a name which conversely is confined to this Veda. To it especially are devoted i. 25, v. 22, vi. 20, vii. 116; and to its specific, the *kuṣṭha*-plant (*Costus speciosus*), v. 4 and xix. 39; incidental mention of the disease is found in i. 12, 2, iv. 9. 8, ix. 8. 6, xix. 34. 10, 39. 1 and 10. The *Gaṇamālā*, Atharv. Par. 32, gives a long list (cf. *Kaus.* xxvi. 1 n.) of hymns that encompass its destruction. This list, *takmanāśana-gaṇa*, is made by taking the first five hymns cited above, and adding to them the hymns against *kṣetriya* (ii. 8 and 10, iii. 7), against *yakṣma* (iii. 11, vi. 85 and 127), various panacea-hymns (ii. 9, iv. 23, v. 9, vi. 26 and 91, ix. 8), and a hymn (vi. 42) originally intended to appease anger—heat forming the *tertium comparationis*. The symptoms described are alternation between heat and cold, delirium, return of the fever either (at the same hour) every day, or every third day, or omitting every third day. Associated with it are jaundice,

certain red eruptions (v. 22. 3), headache, cough, spasm, and itch (*pāman*), the last being its brother's son (v. 22. 12).

Yakṣma (also *rājayakṣma*, *ajñātayakṣma*, to which *Taitt. Sam.* ii. 3. 5. 1-3, 5. 6. 4-5 add *pāpayakṣma*) seems to have in the Atharva (cf. ii. 33, iii. 11, v. 29. 13, vi. 127. 3, ix. 8, xix. 36 and 44) no narrower signification than 'disease.' With this accords the statement of *Vāj. Sam.* xii. 97 that there are a hundred varieties of *yakṣma*. The employment of its hymns in the *takmanāśana-gaṇa* implies either a disease of marked febrile symptoms or (preferably) such an indefinite meaning. So also does the fact that *Sāntikalpa*, xxiii. 2 employs *yakṣmopaghāta* as a synonymous name for this *gaṇa*, while other texts have the form *yakṣman*, congenerically adapted to *takman*. Zimmer (*Altindisches Leben*, 1879, p. 375 ff.), in accord with the later medicine, sees in it a pulmonary disease. But a variety of *yakṣma*, called *jāyanya* (*Taitt. Sam. l.c.*), is probably identical with the Atharvan *jāyānya*; for *jāyānya* is associated with *yakṣma* in Atharv. xix. 44. 2, and called *rājayakṣma* by Keśava at *Kaus.* xxxii. 11. All this will be correct if *yakṣma* means simply 'disease,' and still in harmony both with Dārila's statement (*loc. cit.*), that *jāyānya* is some species of tumour (*akṣata*), and the fact that both etymology and the ritual point to *jāyānya's* being a venereal disease. Venereal disease (*grāmya*) is treated in *Kaus.* xxvii. 32f., while the hymn there rubricated deals with *ajñātayakṣma* and *rājayakṣma*. Sāyana's statement, that consumption produced by sexual excesses is meant, is evidently an attempt to harmonize the ritual with the meaning of *yakṣma* in the later medicine. Here may be added the mention of 'abscesses' (*vidradha*, vi. 127, ix. 8. 20); 'scrofulous swellings' (*apachit*); and the similar, but harder, 'closed tumours' (*akṣata*, vi. 25 and 57, vii. 74. 1-2, 76. 1-3). Leprosy (*kilāsa*) is the object of two hymns (i. 23 and 24). Keśava also assigns to its cure the practice (*Kaus.* xxviii. 13) with the *kuṣṭha*-plant, which Dārila, supported by the *Gaṇamālā*, declares to be a cure for fever. Keśava's statement has probably no deeper basis than the fact that *kuṣṭha* in the later language means leprosy.

Kṣetriya is another term of uncertain meaning. The Atharvavedins regularly explain it as 'inherited disease,' though 'chronic disease' has recently been suggested by Jolly. No description of its symptoms is given. As in the case of *yakṣma*, the inclusion of its hymns (ii. 8 and 10, iii. 7 [cf. besides ii. 14. 5]) in the *takmanāśana-gaṇa* suggests either a disease of marked febrile character or a general term for disease. Even if, as is most probable, the word means 'hereditary,' there is no reason to believe that the designation was accurate.

Easily identified, on the other hand, is dropsy (*jālodara*). To its cure i. 10, vi. 22-24 and 96, and vii. 83 are devoted. In vi. 24 it is associated with heart disease—an instance of good diagnosis. The mention in the same hymn of pain in the eyes, heels, and front part of the foot refers to the characteristic puffing of these parts. Heart-disease (*hrdyota*, *hrdayāmayā*) is mentioned only incidentally (i. 22. 1, v. 20. 12, 30. 9, vi. 14. 1, 24. 1, 127. 3), and probably referred to any pain in the region of the heart. Paralysis (*pakṣahata*, lit. *hemiplegia*) is mentioned in the *Kausika* itself (xxx. 18), but the hymn rubricated is extremely obscure, and was probably not intended for this purpose.

Excessive discharges (*āsrāva*), and in particular diarrhoea (*atisāra* of the later medicine), have for their cure i. 2, ii. 3, and probably also vi. 44 (cf. above). There is perhaps an allusion to it in

connexion with fever in v. 22. 4. The opposite troubles, retention of urine and constipation, are the subject of i. 3 according to *Kaushika* xxv. 10 ff.; the hymn itself seems, however, to be entirely concerned with the first of these diseases.

Cough (*kās*, *kāsa*) is mentioned in connexion with fever (i. 12. 3, v. 22. 10-12), and is also the object of a separate ceremony in which vi. 105, vii. 107 are rubricated. *Balāsa* is variously interpreted as 'consumption' and as 'internal sores'; the assonance both with *kāsa* and with *kilāsa* is noteworthy, and strengthens both interpretations. The hymn in which it figures most prominently is vi. 14, rubricated by *Kauś.* xxix. 30 in a ceremony which Keśava terms a 'phlegm-cure.' This term cannot, however, be taken to indicate necessarily some throat disease, as it means any disease ascribed to an abnormal condition of the 'phlegm' in the technical sense of the later medicine (for Keśava's use of such terms cf. xxvi. 1 and 28). *Balāsa* is also mentioned in iv. 9. 8, v. 22. 11-12, vi. 127. 1-2, ix. 8. 8, 10, xix. 34. 10. In connexion with it (v. 22. 11) appears *udyuga*, perhaps 'spasm.'

Headache (*śirsakti*, *śirsāmaya*) is mentioned in i. 12. 3 and v. 4. 10, both times in connexion with fever, and also in ix. 8—an effort to enumerate all diseases. The practice of *Kauś.* xxviii. 13 is said by Dārila to be a cure for headache, while Keśava applies it in a broader fashion. Neuralgia (*viśalyaka*) is mentioned in vi. 127, ix. 8. 2, xix. 44. 2; pain in the ribs (*prstyāmaya*, inter-costal neuralgia?) in xix. 34. 10; rheumatic troubles are perhaps meant by *viṣkandha*, and *saṁskandha* (i. 16. 3, ii. 4, iii. 9. 6, iv. 9. 5, xix. 34. 5, 35. 1); with these may be associated *viśara* (ii. 4. 2), *āsurika*, and *viśarika* (xix. 34. 10). Some sharp internal pain is ascribed in vi. 90 to the spear of Rudra. Its exact nature is indeterminable, but the later medicine applies the same term to colic. A 'limb-splitting' disease (*āṅgabhedā*) also occurs in xix. 44. 2, while two hymns (ii. 33, ix. 8) aim at eradicating pain and disease from all parts of the body. Pains in the eyes (cf. also v. 4. 10, 23. 3, vi. 24. 2, 127. 3) and ears may be especially mentioned. A separate charm for diseases of the eye (*alajī* occurs also in ix. 8. 20 as the name of some form of eye disease) is found in vi. 16 according to its manipulation in *Kauś.* xxx. 1-6. The parallelism of the hymn with v. 23 suggests that the pains in the eyes are ascribed to the presence of worms. For diseases ascribed to worms cf. above.

Of more external evils a 'flow of blood' (*lohita*, vi. 127, *vilohita*, ix. 8. 1, xii. 4. 4) means, perhaps, bleeding at the nose (cf. the association with diseases of the head in ix. 8. 1). A special charm against bleeding is i. 17 (rubricated at *Kauś.* xxvi. 10), to stop, according to Keśava, either an external or internal hemorrhage, or excessive menstruation. Against the last of these troubles is directed the practice of *Kauś.* xxviii. 15, rubricating v. 6. The cure of wounds and fractures is the object of iv. 12 and v. 5 (rubricated at *Kauś.* xxviii. 5-6 and 14). Wounds or sores of unknown origin (*ajñātārus*) are healed with vi. 83. 4. In a snake-infested country like India cures for poison were sure to be in demand. For the poisonous bites of snakes the Atharva contains three charms (v. 13, vi. 12, x. 4), besides one (vii. 56) against the bites of scorpions and other poisonous reptiles, and another (iv. 6 and 7) against the poison of arrows. Internal poisoning does not seem to have been treated separately.

In certain forms of disease, e.g. mania, epilepsy, the distinction from possession is very slight. In case of possession, iv. 20 and 37, vi. 2, 2, or 52, or 111 (this last hymn speaking unmistakably of madness), or the *chātanaṅgaṇa* (list of hymns for

expulsion of demons) may be employed. In a rite against madness, *Kauś.* xxviii. 12, Atharv. v. 1. 7 is rubricated; epilepsy (*apasmāra*) is said by Keśava to be one of the diseases for which i. 22 is employed at *Kauś.* xxvi. 14-21. *Grāhi*, 'fit,' 'seizure,' is practically a she-demon (cf. ii. 9. 1, 10. 6, iii. 11. 1, vi. 112. 1, viii. 2. 12, xii. 3. 18). Another demon which seizes children is *jambha*—apparently a designation of convulsions or lock-jaw (cf. ii. 4. 2; *Kauś.* xxxii. 1-2).

The *Kaushika*, in accordance with its method of treating symptoms, has also cures for 'thirst' (xxvii. 9-13) and 'fright' (xxvi. 26 f.), which we should hardly class as diseases. The latter may be what we call nervousness, but V. Henry has no warrant for interpreting the former as dipsomania. Inauspicious marks (cf. art. PRODIGES [Vedic]) on the body (*pāpalaṅgaṇa*, xxxi. 1; *arīṣṭa*, xxviii. 15) are also treated as diseases. Keśava thinks that the ceremony to remove wrinkles (*Kauś.* xxv. 4 f.) has reference only to wrinkles in a young man, in whom they are portentous. The ceremony to stop the loss of hair (*Kauś.* xxxi. 28), employing two hymns, vi. 136 f., evidently composed for this very purpose, is to be ascribed to the same motive rather than to vanity. A person whose hair has come into contact with a *śamī*-tree is called *śamīlūna* ('cut by a *śamī*-tree'), and is supposed to be in danger of suffering some injury to his hair. For his benefit is the ceremony of *Kauś.* xxxi. 1, and the hymn rubricated seems to have had the same case in view.

Finally, a number of ceremonies are designated as panaceas (cf. *Kauś.* xxv. 4-5, 20, 21, 22-36, xxvi. 1, 34, xxvii. 5-6, 27, 34, xxviii. 8, 17-20, xxx. 17-18, xxxi. 5, xxxii. 3-4, 18-19, 26-27), though in some cases a more narrow interpretation seems possible.

(4) *The materia medica of the Atharvans.*—That the waters should be considered healing is most natural in virtue of both their cleansing and their cooling properties. So it is stated in Atharv. ii. 29. 6 that the waters give strength, and in iii. 7. 5=vi. 91. 3 that they are remedial and expel disease (cf. also the passages from the Rigveda cited below). In the *Kaushika*, water is employed most frequently, either for its own sake (so the holy water in xxxi. 21) or as a vehicle for other remedies. To the waters are especially devoted the hymns, Atharv. i. 4-6, employed as a panacea at *Kauś.* xxv. 20, and vi. 22-24, employed as cures for dropsy at *Kauś.* xxx. 11-13. Of particularly great efficacy, however, is the water dug up by ants (cf. Atharv. ii. 3, vi. 100, and Bloomfield, *Am. Jour. Phil.* vii. 482 ff.). Hence earth from an ant-hill serves as an annulet, a drink, or an external application for the cure of diarrhoea, etc. (*Kauś.* xxv. 7), and of *kṣetriya* (xxvi. 43); and as an antidote for poison (xxx. 26, xxxii. 6). There is the possibility of the patient's receiving sufficient formic acid (cf. art. CHARMS AND AMULETS [Vedic] for method of investiture) to act as a cathartic. In all these passages, except xxxi. 26, there is associated with it a lump of ordinary earth. The separate use of the latter as an emetic in *Kauś.* xxviii. 3 (so Dārila) is doubtful, as Keśava and Sāyana understand the fruit of the *madana*-tree. Noteworthy is the fact that both the clod of earth and the ant-hill seem to be looked upon as growths (cf. their inclusion in the list of auspicious plants, *Kauś.* viii. 16). Similar remedies are earth from a mole-hill, to cure constipation (*Kauś.* xxv. 11), this material being selected because the animal makes its way through dark passages, and also because one of its names, *ākṣukariṣa*, is compounded with a word for 'excrement' (cf. *Satapatha Brāhmaṇa*, ii. 1. 1. 8); and earth from a bee-hive (xxix. 10), as an antidote to poison.

Plants are to the Vedic mind the offspring and the essence of the waters, the embodiment of their curative properties. Hence they, too, are implored to bestow remedies (cf. Atharv. vi. 96, and esp. the long hymn viii. 7 addressed to all plants, and used as a panacea at Kauś. xxvi. 40; cf. also the *oṣadhī-stuti* of the Rīgveda cited below). The list of plants employed as remedies in the *Kauśika* is long, and comprises the following: in a number of passages (xxv. 20, xxvi. 40, xxvii. 5, 20, 33, xxix. 30, xxx. 8, 11, xxxi. 8) the prescription calls simply for 'auspicious trees,' that is, the trees enumerated in viii. 15. Of trees in this list are specifically prescribed: *palāśa*=*Butea frondosa* (xxv. 30, xxvi. 34), a tree of pre-eminent holiness because of its mythical associations (cf. art. CHARMS AND AMULETS [Vedic]); *kāmpīla*=*Crinum amarullaceae* (xxvii. 7, xxviii. 8); *varaṇa*=*Crataeva roxb.* (xxvi. 37; cf. same art.); *jāṅgīda*=*Terminalia arjuna* (xxvi. 43); *vetasa*=*Calamus rotang* (xxvii. 10). Other remedies figure in the list of auspicious plants (Kauś. viii. 16): *samī*=*Prosopis spicigera* (xxviii. 9, xxxi. 1); *śamākā* (xxxi. 1); *darbhā*-grass=*Poa cynosuroides* (xxv. 37, xxvi. 30, xxvii. 23, xxix. 2 [Com.]); also, after its use as sacrificial straw, *barhiś* (xxv. 31); *dūrvā*-grass=millet (xxvi. 13); rice (xxix. 18; cf. also the use of porridges, below); and barley, *yava* (xxv. 17, 27, xxvi. 2, 35, 43, xxviii. 20, xxx. 17), efficacious because fancifully connected with *yavayati*, 'he separates.' Another plant not in this list, but evidently employed because of its holiness is the *soma*-plant (xxx. 22).

Other plants owe their efficacy as remedies to their anti-demoniacal qualities (for these qualities cf. art. WITCHCRAFT [Vedic]): *īṅgīda*-oil (xxv. 30); *tila*, *taila*=sesamum and the oil made from it (xxvi. 1, 13, 43, xxvii. 33, xxix. 8); reed (xxvi. 27); *virīṣa* and *uśīra*=*Andropogon muricatus* (xxv. 30, xxvi. 26, xxix. 24-26, xxxii. 13); hemp (xxv. 28, xxvii. 33); *khadīra*=*Acacia catechu* (xxv. 23 f.); mustard (xxv. 23, 27, 31, xxx. 1 f.; cf. also the *Āsurīkalpa*, Atharv. Par. 35); *trapusa*=colocynt (xxv. 23; also mentioned by Keśava at xxvi. 22, where it seems to be used principally for its colouring property). The use of wood from a club (xxv. 23) belongs to the same category.

A number of other plants owe their employment to more or less fanciful etymologies: *muñja*-grass=*Saccharum munja* (xxv. 6, xxvi. 2, 33, xxxii. 3), associated with *muñchati*, 'he loosens.' Leaves of the *paraśu*-tree, 'axe-tree,' are employed at xxx. 14 to cause sores to open, and wood of the *kṛmuka*-tree at xxviii. 2 to cure wounds inflicted by poisoned arrows, because *kārmuka* means 'bow.' Growth of the hair is promoted (xxx. 28) by the *nītatnī*-plant, 'she that takes root,' with which are associated the *jivī* (root *jiv*, 'to live') and the *alākā* plants. The *lākṣā* of xxviii. 5 seems to be a synonym for *arundhatī* of the hymn iv. 12, felt to contain *arus*, 'wound,' and the root *dhā*, 'to set,' and hence employed to cure fractures and wounds. Bunches of grass (*stambha*) are employed (xxix. 4) to confine (root *stambh*) the effects of poison; they are also added (xxxii. 3, 14) to water with which a patient is washed or sprinkled.

In addition are employed: lotus roots (*bīsa*, combined with *āla* and *ula*, xxv. 18); *haradrā*=*Curcuma longa*, as a cure for jaundice (xxvi. 18) [because of its yellow colour], as an antidote to poison (xxviii. 4, xxxii. 7 [Com.]), or as a panacea (xxx. 5 [Com.]). It is also prescribed, according to the commentators, in the cure for leprosy of xxvi. 22. As the cure consists merely in painting out the spot, *Eclipta prostrata* or indigo may be used instead. There is mention also of *prśniparnī*=*Hemionitis cordifolia roxb.* (xxvi. 36); *pippalī*, pepper (xxvi. 38); black beans (xxvii. 14); *sadām-*

puṣpā (xxviii. 7); *kuṣṭha* (xxviii. 13); *alābu*=*Lagenaria vulgaris* (xxix. 13 f.); *khalatula* (xxix. 15 f.); *karīra*=*Capparis aphylla roxb.* (xxix. 20); *śīgru*=*Moringa pterygosperma* (xxix. 23); *śāka*=*Tectona grandis* (xxx. 4); *vibhītaka*-nut=*Bellerica terminalia* (xxx. 9); *nikatā*-plant (xxx. 10); *samī-bimba*=*Momordia monadelphica* (xxx. 8); *śīrṣa-parṇī*=*Azadirachta indica* (xxx. 8); *priyaṅgu*=*Panicum italicum* (xxxii. 2). The commentators at xxv. 10 also mention, as instances of substances that promote micturition, camphor, *Terminalia chebula*, and *haritaki*.

The fragrant powders employed in xxvi. 29 are probably made from plants, and owe their efficacy to their fragrance, just as the use of liquorice (xxxii. 5) is due to its sweetness. On the other hand, the *pūṭika*-grass is employed (xxv. 11) in a cure for constipation, because of the offensive odour implied in its name.

Next in prominence to the plants are the products of the cow, which, as partaking of its holiness, are used either for their own efficacy, or as a suitable vehicle for other remedies: butter (*ājya* and *sarpis*, xxv. 4, 8, xxvi. 1, 8, 29-33, xxvii. 14, xxviii. 4, 13, xxix. 22 f., Com. to xxx. 5 and xxxii. 7); curds (*dadhī*, xxvi. 13); milk (xxvi. 17, xxviii. 14, xxx. 24, xxxii. 2); milk and butter (xxviii. 6); butter-milk (xxx. 23). The hair of a red steer is employed (xxvi. 14), cow-dung (xxvi. 22), and cow-urine, the particular remedy of Rudra (cf. below), at xxx. 11. The *pañcagavya* (five products of the cow), which afterwards becomes a potent panacea, is not yet concocted, though all its ingredients are in use. Its preparation and administration are described in one of the Atharvan *Parīṣiṣṭas*, *Brahmakūṛcha-vidhi*.

Food of any sort (xxviii. 12, 15, xxix. 16) may serve as a vehicle, but porridges (xxvi. 19, xxvii. 10, 31, xxviii. 3, 16, xxix. 15, Com. to xxx. 5 and xxxii. 7), especially rice porridges (xxvi. 18, xxvii. 32, xxix. 27), are thus employed most frequently, or even separately administered. Honey (xxvi. 1, xxviii. 28, xxx. 23) and fat (xxvi. 1) are also prescribed, and in xxxii. 1 the mother's breast serves as a vehicle for giving medicine to an infant.

A number of substances are applied, on account of their offensiveness, to sores, in the hope of inducing them to fly away: powdered shell and dog's saliva (xxx. 16); the scourings of teeth and pollen of grass (xxx. 14 f.); rock-salt and spittle (xxx. 17). Comparable here is the administration of rotten fish in xxvii. 32. Of animals comparatively little use is made; the frog figures in a cure for fever (xxxii. 17), and yellow birds in a cure for jaundice (xxvi. 18), but in both cases the disease is to be transferred to them. The porcupine serves in xxix. 11 f. as an antidote to poison, because he is an animal not liable to trouble from snakes. For the same purpose also an unknown insect is employed as a representative of the mythical steed of Pedu (cf. Bloomfield, *SBE* xlii. 605 ff.). Also for mythical reasons are employed in xxx. 18 f. earth that a dog has stepped upon, and a louse from a dog (cf. *ib.* p. 500 ff.). Manufactured articles are employed chiefly as amulets (cf. below). There occur also: wood-shavings (xxv. 11); grass from a thatch (xxv. 37, xxvii. 3, xxix. 8, xxx. 13, Com. to xxx. 2); old clothes and broom (xxviii. 2); bowstring (xxix. 9, xxxii. 8, 10); *pramanda*, tooth-wash (xxv. 11).

The efficacy of these remedies depends not entirely upon themselves, but also upon the method of their preparation and administration. In the first place, as in other magic performances, there is a quasi-religious performance (cf. art. MAGIC [Vedic]), and the remedies are regularly daubed with the leavings (*saṃpāta*) of the offering. There are other requirements besides: the offerings must

sometimes be made from *cornucopie* instead of a spoon (xxv. 30), or the medicine must be administered from *cornucopie* (xxviii. 8), or from a particular sort of cow's horn (xxxi. 6), or a red copper vessel (xxix. 19), or through a yoke (xxvii. 1), or with a pestle (xxix. 22); or must be prepared in a vessel of reed and stirred with a reed (xxvii. 10), or stirred with poisoned arrows (xxviii. 3); or the fire used must be a forest fire (xxix. 19), or made of birds' nests (xxix. 27); or built on a mat of reeds floating in water (xxix. 30). The place of the ceremony is not always a matter of indifference: one cure of dropsy (xxxii. 14) must be attempted at the confluence of two streams, other cures at the cross-roads (xxv. 30, xxx. 18), or in a ditch (xxvii. 4). The position of the patient (xxvii. 10, 25), the clothing and food of the celebrant (xxxi. 28), are also efficacious. So, too, is the time of the ceremony: thus that of xxvii. 21-25 must be repeated at sunrise, noon, and sunset. The time most frequently prescribed is *avanakṣatre* (xxvii. 29, xxviii. 5, xxx. 9 [Dārila], xxxi. 28, 'at the time when the stars fade away'). The purpose is clearly expressed in Atharv. iii. 7. 7: 'when the constellations fade away and when the dawn fades away, (then) shall he shine away from us every evil and the *kṣetriya*.' In one case (xxxi. 28), where the purpose is to secure (black) hair, the time is further defined as 'before the crows come.'

(5) *The Atharvan methods of treating diseases.*—Of practices of a real therapeutic value the *Kaṣika* contains but little. The most delicate is the probing of the urethra, which seems to be prescribed (xxv. 15-16) for the relief of one suffering from retention of urine. It is instructive to observe that the discovery of this operation may be due to an attempt to carry out practically the statements of the hymn: 'I split open thy *pasas* like the dike of a lake,' and 'relaxed is the opening of thy bladder.' Originally, however, these were probably nothing but the usual statements of the conjurer that he was accomplishing what he wanted to accomplish. A similar instance (at a later period) of the evolution of a practical out of a magical proceeding may be seen in Dārila's comment on xxv. 12, where the giving of an enema is substituted for an operation, the symbolism of which should be transparent. The same hymn (Atharv. i. 3) harbours another practice, the real value of which may have helped the Atharvavedins in the cure of minor troubles. The urine is to come out with the sound 'splash,' and the ritual speaks also of the pouring out of water—a piece of symbolism to be attributed unhesitatingly to the time of the composition of the hymn. The sound of flowing water, however, does exercise a beneficial influence in such cases, especially when the trouble is of a nervous origin. A compress of sand is employed (*Kaṣ.* xxvi. 10) to stop the flow of blood, and the practice is indicated in the hymn itself (Atharv. i. 17. 4). In *Kaṣ.* xxviii. 3 an emetic is given to one wounded by a poisoned arrow. The application of leeches to sores is found in *Kaṣ.* xxx. 16, but accompanied by other ceremonies that one would expect to produce infection of the wound; and the same may be said of the breaking of pustules (xxxi. 10) by rubbing them against the door-post. In *Kaṣ.* xxxii. 24 a torch is applied to the bite of a serpent. The original intent must have been symbolic, but the result may have been some sort of cauterization.

Apart from these instances, the treatment is always magical. As usual in the Atharva, it is magic veneered with religion. The employment of a hymn is regularly accompanied with an oblation, perhaps even inserted in the elaborate framework of the New and Full Moon Sacrifice (cf. art. MAGIC [Vedic]); and it is this oblation, generally through the leavings of the offering, that gives efficacy to

the ceremony. Of the hymns but little need be said, as all are accessible in translations.¹ They are prayers addressed to the gods, or to the disease, or to the remedy, with more or less explicit indication of what is wanted of them. Sometimes the author adopts a more confident tone, especially when he knows the name or lineage of the disease, or its remedy, and thus has them in his power. Then he states what he is doing, or orders the disease to depart. For, according to a well-known principle of magic, a verbal statement is an efficient symbolical imitation of an act.

The ceremonies are of greater interest. As the diseases are generally ascribed to a demon, the problem for the practitioner is the removal of this troublesome being. The methods of accomplishing this are in general either to propitiate or to exorcize the spirit, and in this we have the division into homœopathy and allopathy. In the one case, the demon is given what is most acceptable to him, as being of his own nature; in the other case, he is brought into contact with what is presumably the most repugnant to him.

Some ceremonies in which the exorcistic character is specially noticeable are: *Kaṣ.* xxv. 22-36, rubrication of the *chātanagana* (list of expelling hymns); xxvii. 6, xxxii. 18, in which the cure is effected by the laying on of hands; xxviii. 11, in which a ring of magic powder is drawn round the house to prevent the return of the demon; xxix. 7, where the door is opened to facilitate the departure of the demon; and xxxi. 3, a curious ceremony in which the offering is made in a fire surrounded by a ditch filled with hot water, the potency of this ring having been increased by circumambulation. The apparatus seems to be a trap for the demons.

The methods by which the magical substance is brought into contact with the patient may next be noted. In cases where this constitutes the whole of the ceremony the references are in italic figures. Inhalation: wood is laid on the fire, and, according to vii. 28, the patient breathes the smoke. This is part of the ceremony for expelling demons (xxv. 23) and worms (xxvii. 17, 20, repeated at xxvii. 26, xxix. 30). Its use alone (xxv. 20 f.) as a panacea must also be simply exorcistic. Fumigation occurs at xxxi. 19 and 22. The breath of the performer is also efficacious (xxv. 9). The power in the laying on of hands has already been met with; hence it is not surprising to find that poison may be driven out (xxxii. 23) by rubbing the patient from head to foot. Rubbing is also prescribed (xxxi. 9) for sores and (xxv. 5) for wrinkles. There are many applications that must be smeared or rubbed on, as ointments (xxv. 4, xxviii. 6, 10, xxx. 5, xxxi. 9); other substances are either smeared over the whole body of the patient (xxvi. 18, 29, 36, xxviii. 13) or applied locally (xxv. 8, xxvi. 22, 34, xxix. 23, xxxi. 18, 26). All these applications seem intended to benefit the patient; but in another group of cases (cf. above) the purpose is apparently to drive sores away by applying to them the most offensive substances. Whenever any indication is given, the rubbing must be downwards, to drive the trouble into the part of the body where it can do least injury, and finally out of the feet. This rule, implied in R̥gveda x. 60. 11-12, may be taken as universal; so also the precept (*Kaṣ.* xxviii. 13) that the rubbing must not be reversed. When this is done, its effect is destructive, and hence it is employed (xxix. 22) to kill worms.

Two other methods, *āplavana*, 'the pouring on,' and *avasechana*, 'the sprinkling on,' are distinguished also by the fact that the water in the former case contains the leavings of the offering,

¹ For such as are not included in Bloomfield's translation, cf. the Whitney-Lanman tr. of the Atharvaveda *Saṁhitā*, Harvard Oriental Series, vols. vii. and viii.

while in the latter case it is merely blessed with the hymn, unless, as in xxvii. 28, xxviii. 8, xxix. 30, there is a specific direction for the addition of the leavings. In either case the patient is wiped down (vii. 17) from head to foot, and given (vii. 26) some of the water to drink. The water may, of course, contain other substances also, and the position of the patient and the manner in which it is to be poured are also in some cases specified. Instances of the *āplavana* are xxvi. 41, xxvii. 4, 7, 34, xxviii. 19, xxix. 26, xxxii. 3, 14; of the *avasechana*, xxv. 17, 37, xxvi. 25, 31, xxvii. 1, 8, 28, 29, 33, xxviii. 2, 5, 8, xxix. 8, 9, 30, xxx. 8-10, 13, xxxi. 2, 28, xxxii. 4, 10, 15, 17. The two are sometimes combined (xxvi. 41, xxvii. 1, 4, and 7-8, xxxii. 3-4 and 14-15). In the last case hot water is used for the one, cold water for the other. Other methods of washing, chiefly of a more local nature, are xxv. 34, xxviii. 1, xxx. 11, xxxi. 1, 11, 13. The leavings of the offerings are also put directly upon the patient's head (xxvi. 39, xxix. 19), or blessed substances are inserted in his nostrils (xxvi. 8, xxxii. 21). Frequently also the magic substance is given to the patient to drink (xxv. 7, 11, 18, xxvi. 1, 12-13, 14, 17, xxvii. 12, 29, xxviii. 1-4, 6, 14, 16, xxix. 8, 10, 11, 13, 18, 30, xxxi. 5, 6, 23-25, 26, xxxii. 2, 7) or to eat (xxvi. 18, xxvii. 31, xxviii. 9, 12, 15-16, xxix. 12, 15, 25, 27, 28, xxx. 3-6). In this way hot infusions (*jvāla*), prepared by plunging a burning or heated substance in water, are employed (xxvii. 29, 33, xxviii. 2, xxix. 8, xxx. 8, xxxii. 10).

The medicine may also be applied as an amulet. In this case the patient will have to drink a solution in which the amulet has been steeped for three days, so that he may be benefited more than would at first sight appear (cf. art. CHARMS AND AMULETS [Vedic], and add to the instances cited: *Kaus.* xxvi. 11, a potsherd from a ruin (?) to stop the flow of blood; xxvi. 21, hairs from the breast of a red steer, glued together and wrapped with gold wire, to cure jaundice; xxvi. 26-27, four stalks of white-blooming *Andropogon muricatus* [*vīriṇa*], or four pieces of reed, each burnt in three places, to cure 'fright'; xxviii. 7, *sadampuspā*-plant = *Calotropis gigantea*, in case of possession; xxx. 1, mustard for diseases of the eye; xxxi. 26, piece of an ant-hill, in case of poison; but the liquorice of xxxii. 5 is administered in liquid form, according to the commentators).

The transfer of a disease to another person is a wish most vigorously expressed in Atharv. v. 22. 4 ff. and vi. 26. 3. The ritual endeavours to accomplish this in xxvii. 9-13, in the interest of a person suffering from 'thirst.' More frequently the transfer is to an animal: fever to a frog (xxxii. 17), jaundice to yellow birds (xxvi. 18), madness to birds (xxvi. 33). The selection of the cross-roads for some ceremonies is doubtless to be connected with this idea, as is also the direction (xxx. 10) for the rubbing of sores against the door-post (cf. also Atharv. xii. 2. 19, 20).

In addition to these general practices there are a number of symbolical acts adapted to the special situation, sometimes with a great deal of ingenuity, sometimes in the most banal fashion. As it is impossible to describe all these in detail, it seems best to present some typical examples of the whole process of an Atharvan cure.

Atharv. i. 12 is a prayer to lightning conceived as the cause of fever, headache, and cough. A man suffering from these diseases is given to eat fat, honey, ghee, and sesame oil that have been blessed with this hymn. The head of the patient is then covered with a turban of *mūṣṭā*-grass. This grass is not only connected by its name with the idea of loosening, but it is also a mythical home of lightning (Agni), from which the patient is planning to be released. He then takes in his left hand (this is inauspicious) a sieve containing parched grain (a symbol of the effect of the fever), and walks along, scattering the grain while he recites the hymn. He continues to advance, carrying in his left hand the sieve and the turban, in his right hand a

bow-string and an axe. He is followed by the celebrant, and preceded by the latter's assistant—a measure of precaution. When some manifestation of the disease occurs (so that the presence of the demon is assured), he lays down the sieve and the turban (the abode of the cause of the disease), and the procession returns. On the way home he lays down the bow-string (to stop pursuit by the demon who has been exorcized). Ghee is blessed with the hymn and put up the patient's nose. Finally the priest mutters the hymn, while touching the patient's head with a bamboo staff that has five joints (and seems to serve as a conductor of the magic potency).

In a case of jaundice, the practitioner desires to banish the yellow colour to yellow objects, and to obtain for the patient a healthy redness, or, as the hymn puts it, 'to envelop him in every form and strength of the red cows.' Hence he puts the hair of a red bull into water, blesses it with Atharv. i. 22, and gives it to the patient to sip. Then he pours water over the back of a red bull, and gives that to the patient to sip. An amulet, prepared from the part of a hide pierced by a peg, is tied on the patient while he is sitting on the hide of a red bull, and he is also given milk to drink. Next the patient is fed with a porridge mixed with yellow turmeric, and he is daubed with the rest of this porridge and with another porridge from which he has not eaten. He thus acquires a yellow coating that can easily be removed. Certain yellow birds are then tied by their left legs to the foot of the couch, and the patient is washed so that the water will fall upon the birds (carrying the yellow coating of porridge with it). If these cry out, the patient must address them with the hymn. The patient is then given a porridge and told to step forth. Finally he is provided with an amulet of hairs taken from the breast of the red bull.

Much simpler is a cure for fever by heating an axe while muttering Atharv. i. 25, plunging it in water, and pouring the water thus heated over the patient. Leprosy may be cured in an equally simple fashion by rubbing the spot with cow-dung until it bleeds, and then painting it by rubbing in yellow turmeric, *Eclipta prostrata*, or indigo, blessed with Atharv. i. 23 and 24. Or a ceremony may be performed to the Maruts, in which all the ingredients are black.

3. Statements relating to disease in other texts.

—In the R̥gveda the interest naturally centres in the relation of the greater gods to disease. Among these Rudra may claim the first mention; the twofold aspect of this god is well summarized by the author of viii. 29, a *brahmodya*, or series of theological charades. Verse 5, to which the answer is 'Rudra,' runs: 'One holds a sharp weapon in his hand, is bright, potent, and has as his remedy the *jalāsa*.' On the one hand, he is a malevolent deity armed with a 'cow-slaying,' 'man-slaying' missile, whose ill-will, if not deterred, will bring injury and death to man and beast (cf. i. 114. 7, 8, ii. 33. 1, 4-6, 11, 14, 15, iv. 3. 6, vi. 28. 7, x. 169. 1). These are but general statements of the association of Rudra with disease which the Atharva (vi. 90, and passages cited above) expresses in concrete form. On the other hand, as the sender of disease, he is best qualified to cure it, and hence he is styled (ii. 33. 4) 'the most eminent of physicians.' His healing powers are mentioned with great frequency, as are also the choice and numerous remedies he holds in his hands. With them he is implored to remove disease and make all sound, both man and beast. His distinctive remedy, the *jalāsa*, is shown by the Atharvan ritual to be cow-urine, the medicinal use of which goes back to Indo-Iranian times, as *gaomaśa* is prescribed in the Avesta (cf. Bloomfield, *Am. Jour. Phil.* xii. 425-429). For these aspects of Rudra, cf. i. 43. 4, 114. 5, ii. 33. 2, 7, 12, 13, v. 42. 11, 53. 14, vi. 47. 3, vii. 35. 6, 46. 2, 3; Atharv. ii. 27. 6.

The Āśvins are also divine physicians, but, unlike Rudra, they are invariably beneficent (cf. i. 34. 6, 89. 4, 157. 6, vii. 71. 2, viii. 9. 15, 18. 8, 22. 10, x. 39. 5; Atharv. vii. 53. 1). What is most characteristic of them is that, in addition to general invocations of their healing aid, stories are frequently told of their cures of particular individuals, which are not to be explained as merely myths relating to natural phenomena. They restored Chyavana to youth and its powers (i. 116. 10, 117. 13, 118. 6, v. 74. 5, 75. 5, vii. 68. 6, 71. 5, x. 39. 4, 59. 1), and did the same for Kali (i. 112. 15, x. 39. 8); probably also the gift of a husband to Ghosā (i. 117. 7, x. 39. 3, 6, 40. 5) was preceded by a similar rejuvenescence. To R̥jśāva they restored his eyesight (i. 116. 16, 117. 17-18); for Viśpalā they provided an iron leg (i. 116. 15, 118. 8), to replace

the one she had lost in battle; while Parāvrj was cured by them (i. 112. 8) both of blindness and of lameness. For the story of their cure, in conjunction with Sarasvatī, of Indra, cf. below. The methods of their cures are not indicated, but rather have the air of the miraculous. It may be noted, however, that honey is most closely connected with these gods (cf. Macdonell, *Ved. Mythol.*, 1897, p. 49), and also possesses medical efficiency (cf. above, including all cases of amulets).

In still another way Varuṇa is brought into connexion with disease. Disease is the punishment of sin, and Varuṇa is the moral governor *καρ' ἐξοχόν*. The connexion is particularly clear in i. 24. 9: 'Thy remedies, O king, are a hundred, a thousand. Let thy good will be broad and deep. Drive into the distance Nirrti. Free us from the sin committed' (cf. also vi. 74 and x. 97). It may be taken as certain that the efforts to escape the fetters of Varuṇa and the constantly recurring prayer for forgiveness of sin are not all inspired by pure feelings of contrition and remorse, but are in part at least due to the desire to escape the payment of the wages of sin. The specific thing in connexion with Varuṇa's relation to disease is the fact that he, as the lord of the waters, sends dropsy in punishment for sin, and especially falsehood. This idea, unmistakable in other texts, is probable for the Rigveda (cf. i. 24. 8, where Varuṇa is the 'speaker away of the heart-piercing' demon; and Hillebrandt, *Varuṇa und Mitra*, 1877, p. 63 ff.), though it is not so clear as to be beyond the possibility of denial (cf. Bergaigne, *Religion védique*, 1878-83, iii. 155).

The healing power of the waters is also mentioned quite frequently. Rigv. i. 23. 16-24 is devoted to their praise; they are said to contain immortality and all remedies, and are besought to bestow their remedies and carry away sin (cf. also x. 9. 5-7, and note the frequency with which the waters appear in prayers for long life). In Rigv. vi. 50. 7 they are healing, and in x. 137. 6 they are healing and dispellers of disease.

It would, however, be a mistake to infer from such passages that the concept of the cause of disease is radically different in the Rigveda from what it is in the Atharva. The association with the Rakṣas is clear in iii. 15. 1, vii. 1. 7, 8. 6, 38. 7, viii. 35. 16-18, ix. 85. 1, x. 97. 6, 98. 12, 162. 1; furthermore, in x. 85. 31—a stanza to be recited when the bridal party passes a cemetery—is to be recognized the ascription of disease to the influence of the spirits of the dead. It is for this reason that the sun-gods (i. 35. 9, 191. 8-9, x. 37. 3, 100. 8) and Agni (i. 12. 7, 189. 3) and Brhaspati (i. 18. 2, x. 98. 3) are dispellers of disease—they being the great demon-slayers. The prayer for food that causes no disease (*anamiṣa iṣaḥ*, iii. 22. 4, 62. 14, x. 17. 8) may also be mentioned here as based on the idea of the disease-demon entering a man with his food. The goddess Apvā, a drastic embodiment of 'defecation from fear' invoked in x. 103. 12, may be classed as a disease-demon (cf. Atharv. iii. 2. 5, ix. 8. 9).

Medical charms are, of course, likely to call in the assistance of any and every god; but, apart from these, the explicit mention of healing in connexion with other deities than those mentioned is very sporadic, though doubtless it is conceived as included in a general fashion in their powers of giving long life and prosperity and of destroying demons. The Adityas drive away disease (viii. 18. 10); Indra cures Apālā of skin disease and her father of baldness (viii. 80; for the treatment of this legend in the Brāhmaṇas, cf. Oertel, *JAOS* xviii. 26 ff.); the Maruts, as children of Rudra, have pure, salutary, and beneficent remedies (ii. 33. 13), which they are asked to bring from various places (viii. 20. 23 ff., cf. also v. 53. 14); Vāta gives remedies (i. 89. 4, x. 186. 1); for Soma, cf. i. 91. 12, iii. 62. 14, viii. 72. 17, 79. 2, ix. 97. 43, x. 25. 11; for Soma-Rudra, vi. 74; for Vāstospati, vii. 54. 1, 55. 1; for the Dawns, x. 35. 6; for the All-Gods, x. 63. 12; for Yama, x. 14. 11; and the more general prayers for health among other blessings, iii. 16. 3, 59. 3, x. 18. 7, 37. 7.

The number of medical charms in the Rigveda is extremely limited. They are, however, of the same general type as the Atharvan charms, and most of them recur also in the latter collection.

Rigv. i. 50. 11-13 is a prayer to Sūrya to destroy heart-disease and dropsy, upon which Atharv. i. 22 has drawn. Rigv. x. 137 = Atharv. iv. 13 is a rather colourless paṇacea-hymn: the gods are to make alive again the man that has sinned; one wind shall blow him a remedy, another shall blow away his disease; the practitioner has come to the patient with weal and health, he has brought a remedy kindly and powerful, and is driving away the *yaksma*; the gods, the Maruts, and all creatures shall protect the sick man, that he may be free from disease; the all-healing, disease-dispersing waters shall make for him a remedy; the performer touches him with his two hands, which confer immunity from disease. Rigv. x. 161 = Atharv. iii. 11 is a charm against *ajñātayaksma*, *rājayaksma* and *grāhi*. The performer declares his power to bring back the patient even though he has gone into the presence of Death and the lap of Nirrti. Comparable with this is the group of hymns Rigv. x. 57-60, the purpose of which is to recall the mind wherever it may have gone. The closing verses are: 'Here the mother, here the father, here life has come. This is thy refuge, come hither, O Subandhu, enter in. As men bind a yoke with a rope that it may hold indeed; so do I hold for thee thy mind, that thou mayest live, mayest not die, mayest not be harmed. As the greatest mother (Earth) here supports these trees; so do I hold, etc. From Yama, son of Vivasvant, have I brought back the mind of Subandhu, that thou mayest live, etc. Down blows the wind, down burns the fire, down milks the cow, down shall go thy disease. This hand of mine is rich in blessings, this hand richer still, this hand all-healing, this rubs auspiciously.' Subandhu ('good friend') need not have been originally a proper name, but it was felt to be so at least as early as the time of the Brāhmaṇas, which spin legends about his return to life.

Rigv. x. 163 = Atharv. ii. 33 is a charm of another type: 'From thine eyes, thy nostrils, thine ears and chin, from thy brain, from thy tongue, I tear out the disease of thy head.' The practitioner then proceeds to enumerate other parts of the body, concluding, to guard against any possible omission, with the statement that he tears the disease from the whole being of the patient.

Rigv. vii. 50 is a charm against poison—chiefly that of snakes—abounding in obscure words. Mitra-Varuṇa are to give protection, Agni is to burn it away, the All-Gods are to drive it away, and the rivers are to bestow remedies for it. Rigv. i. 191 is a charm for the same purpose, but more aggressive in its efforts to secure its ends. The beings at which it is directed are styled the 'unseen,' and seem to be chiefly scorpions and small venomous vermin; but doubtless the imaginary worms (cf. above) were also in mind. They are adjured to perish, they have been made visible to all, hence harmless. Their lineage (curiously exalted; Dyauṣ is their father, the Earth their mother, Soma their brother, and Aditi their sister) is known, hence they must be quiet. The sun grinds and burns them. The conjurer has put their poison on the sun, their poison-bag on the house of the keeper of spirituous liquor. The sun will not die, neither will their victims. Little birds and sparks of fire drink their poison without harm: twenty-one peacocks and seven unmarried sisters handle it as if it were water; (*a fortiori*) the conjurer (and his clients), who has grasped the names of all ninety-nine plants that destroy poison, shall not be harmed. Finally, the conjurer, likening himself to the mongoose, which on coming down from the mountains proclaimed the powerlessness of the scorpion's poison, splits the creature with a rock, letting its poison flow to distant lands.

The couplet Rigv. viii. 48. 4-5 seems to be a prayer to guard against any nauseating or diarrhetic effects of drinking soma. Finally, in Rigv. 10. 97 we have the *oṣadhīstuti*, or praise of the curative power of plants.

Mention of particular diseases is extremely rare in the Rigveda: *yaksma* (x. 85. 31, 97. 11-13, 137. 4, 163. 1-6), with its compounds, *ajñāta*-, *rāja*° (x. 161. 1); [*a-yaksma* (ix. 49. 1) is merely disease in general]; *vandana* (?) (vii. 50. 2); jaundice and heart-disease (i. 50. 11-12); heart-disease (i. 24. 8); *grāhi* (x. 161. 1); allusion to *prstyāmaya* is made incidentally in a comparison (i. 105. 18). Extremely obscure are the epithets *aśipada* and *aśimida*, applied to the waters and streams in vii. 50. 4; they seem to mean 'not causing the diseases *śipa* and *śimā*,' of which no other mention is made. *Sipivīṣṭa*, however, occurs as the designation of an animal rendered unfit for sacrifice by skin disease (cf. J. Schwab, *Das altind. Thieropfer*, 1886, p. xviii), and as an epithet of Viṣṇu (*Kausitaki Brāh.* iv. 2; *Saṅkhyāyana ŚS.* xv. 14. 4; and A. Weber, *Über die Königsweihe, den Rājasūya*, Berlin, 1893, p. 125). Various bodily defects are more frequently mentioned; defects of sight seem especially feared (cf. *andha*,

anakṣa, *kāṇa*, *mithūdṛś*); defects of hearing (*badhira*, *abadhira*); lameness (*asreman*, *śroṇa*); loss of virility (*vadhri*).

It is neither possible nor desirable to treat at this length the whole of Vedic literature; but, as the omissions are no less important than the statements, it seems best to limit the treatment to certain texts as representative of the Yajurveda, the Brāhmaṇas, and Upanisads. For the Yajur texts the *Vājasaneyi Samhitā* has been chosen.

The whole system of sacrifice is an attempt to induce the gods to bestow prosperity, in which health is an important element. It is, however, a noteworthy fact that health is by no means so conspicuous an object of prayer as is wealth. Even when it is sought (cf. xxv. 14-23 = Rigv. i. 89), it is in general terms, thus resembling the charms for long life (*āyusyaṇi*) rather than the medical (*bhāṣajyāni*) charms.

For such incidental prayers compare, in addition to prayers for strength, lustre, vigour, life of a hundred years, that occur *passim*, such formulæ as: iii. 17, 'O Agni, thou art protector of bodies, protect my body. O Agni, thou art giver of life, give me life. O Agni, thou art giver of splendour, give me splendour. O Agni, what is wanting in my body, that do thou fill out for me'; ix. 21, 'By sacrifice may my life succeed, my vital breath, my sight, my hearing, my back' (fuller lists in xvii. 29, xiii. 33); xiv. 17, 'Protect my life, my *prāṇa*, my *apāna*, my *vyāna*, my sight, my hearing: enrich my speech, quicken my mind, protect my being.'

For other formulæ of the same general type, cf. vii. 27, xv. 7, xvii. 16, xviii. 2, 6, xxii. 23, xxiii. 18, xxxvi. 1, xxxix. 1, 3. Compare also such prayers for the senses as i. 20, 'Thee for sight (I take)'; and ii. 16, 'Thou art protector of sight, O Agni, protect my sight.' Numerous parallels from other texts may be found under the words *chakṣus* and *śrotra* in the Vedic Concordance. More interesting are the verses xx. 5-9, containing benedictions on various parts of the body. In xx. 26 the blessed world is described as one 'where weakness is not found', and in xii. 106 the speaker quits 'weakness, lack of strength, and sickness.'

The incidental statements of the relation of the gods to disease are on the plane of the Rigveda, and are frequently repetitions of that text. Varuṇa in xxviii. 35 is styled a healing seer (cf. viii. 23 = Rigv. i. 24, 8, and xviii. 49, xxi. 2 = Rigv. i. 24, 11). For the healing power of the waters, cf. iv. 12, ix. 6, xviii. 35, xxxvi. 12; for Brhaspati, iii. 29 = Rigv. i. 18, 2; for Savitar, xxxiv. 25 = Rigv. i. 35, 9; for Agni, ii. 20, xv. 37, xvii. 15; for Aśvins, xxvii. 9, xxviii. 7, 40, xxxiv. 47. Tvāṣṭar, the divine artificer, is more directly connected with the repair of the body than in the Rigveda (cf. ii. 24 = vii. 14 = Atharv. vi. 53, 3 and *Vāj. Sam.* xxxviii. 9).

Of more interest are the collections of *mantras* for ceremonies directly connected with disease. At the *sākamedha*, the third *parvan* of the *chāturmāsya*-sacrifice, occurs a *pitryajña* after which are employed four verses (iii. 53-56) of one of the Subandhu-hymns (Rigv. x. 57, 3-6), to keep the spirits of those engaged in the sacrifice from following the *pitṛs* on their return to the world of Yama. Another portion of the same sacrifice is the *Irāiyambakahoma* to Rudra. The formulæ are found in iii. 57-61; their purpose is to propitiate the god, and so induce him to pass to other peoples without harming the sacrificers. Of similar nature is the *Satarudriyahoma* at the *agnichayana*. The sixteenth book of the *Vāj. Sam.* is composed of its *mantras*. The concept of Rudra is essentially the same as that of the Rigveda, though worked out in fuller detail.

The *Sāutrāmāṇi* is a sacrifice originally intended to expiate the sin of excessive soma-drinking, which leads to a drunken discharge of the sacred liquid. The heavenly prototype of this ceremony is the cure which the Aśvins and Sarasvatī wrought upon Indra when he had been beguiled into *surā*-drunkenness by the demon Namuci. For the details of this story, cf. Bloomfield, *JAOS* xv. 143-163. The formulæ employed constitute books xix.-xxi. of *Vāj. Sam.* Of particular interest are: xix. 10, containing

the name of the disease-demon; xix. 80-95, the detailed account of Indra's cure; xix. 12, 16, xx. 3, 56 ff., 75, 80, xxi. 13, 18, 29, references to the healing power of his physicians and their remedies; xix. 55, 62 = Rigv. x. 15, 4, 6, prayers to the *pitṛs* for health. (For the ritual, cf. A. Weber, *Über die Königsweihe, den Rājasūya*, pp. 92-106, and A. Hillebrandt, *Ritualliteratur*, 1897, p. 159.)

Anatomically interesting are the lists of various parts of the body: xix. 81-93, xx. 5-9, xxv. 1-9 (parts of the horse), xxxi. 10-13, xxxix. 8-10, and the statements relative to conception and birth (xix. 76). The theory of the vital breaths now begins to become prominent; but the whole of this question must be dismissed with a reference to A. H. Ewing, 'The Hindu Conception of the Functions of Breath,' *JAOS* xxii. 249-308.

Of names of disease few occur: *yakṣma* is disease in general (cf. the coupling of *ayakṣma anamiva*, i. 1, iv. 12, xviii. 6, and the mention of the hundred *yakṣmas*, xii. 97). This disease is also mentioned in the *oṣadhīstuti* (xii. 75 ff. = Rigv. x. 97). Its last verse (xii. 97) is, however, peculiar to the version of *Vāj. Sam.*, and mentions *balāsa*, *upacit* (= Atharv. *apacit*), *arśas* (haemorrhoids), and *pākāru* (of uncertain meaning). *Apvā* occurs in xvii. 44 = Rigv. x. 103, 12, while *Viśūchikā* (xix. 10) is an equally vivid name ('she that makes go in all directions') for the demon to whom are ascribed the nauseating and diarrhetic effects of debauch. Heart-disease is mentioned in viii. 23 = Rigv. i. 24, 8; diseases of the eye, *arman*, in xxx. 11; skin-disease in xxx. 20; leprosy in xxx. 17, 21; various deformities in xxx. 10, 21, 22.

Physicians are recognized as constituting a profession (xxx. 10). An amulet is used by the Divine physicians (xix. 80) for the cure of Indra. Finally, iv. 3 is a formula addressed to ointment from Mt. Trikakud: 'Thou art the eye of Vṛtra (for mythology, cf. Bloomfield, 'The Myth of the Heavenly Eye-ball,' *Am. Jour. Phil.* xvii. 399-408), thou art the giver of sight, give me sight.'

In the *Āitareya Brāhmaṇa* there is very little material bearing on the subject. Incidental allusions to various parts of the body occur, among which may be noted the distinction between the senses of taste, sight, and smell, and their organs (v. 22). The processes of procreation and birth are also frequently alluded to in the effort to produce a mystical body for the sacrificer. There is likewise a great deal of talk about the 'vital breaths'—the way in which they may be established in the sacrificer, or may be cut short. The same is true of the various senses and the power of virility; and there is the constantly recurring effort to secure vigour, splendour, sharpness of sense, and the full term of life.

All of this is too general to be of interest in the present connexion. More concrete are i. 18, where the Aśvins are said to be the physicians of the gods; v. 34, where the Brahman priest is the physician of the sacrifice. Freedom from disease is expressly sought in viii. 10 and 11; the healing power of herbs is recognized in general in iii. 40, and in particular that of collyrium for the eye in i. 3. That disease may be produced by a curse is seen in v. 1 (deformity) and vi. 33 (leprosy). Madness is alluded to in vi. 33, and in v. 29 there is mention of a girl possessed by a *gandharva*. Varuṇa's fetters, as productive of drowsy in punishment for a broken vow, figure in the story of Sunahśepa (vii. 15 and 16). The origin of certain deformities is explained mythically in ii. 8. The closest approach to a cure for disease is found in iii. 19, where is imparted the knowledge that will enable one to preserve his sight to old age. In i. 25 is explained the way in which the Hotar

may cause the sacrificer to suffer from *rājayakṣma*, which here seems to mean some (scrofulous) disease of the neck.

An examination of the *Bṛhadāraṇyaka* and *Chhândogya Upaniṣads* shows that the chief interest of these texts in this connexion lies in their anatomical statements. Besides more isolated instances that occur *passim* may be noted the list of the parts of the horse (Brh. i. 1. 1); of the human body (ii. 4. 11); and the elaborate comparison of man with a tree (iii. 9. 28). There are also statements about the heart and its veins (Brh. ii. 1. 19, iv. 2. 3, 3. 20; Chhând. viii. 6. 1 and 6); the structure of the eye (Brh. ii. 2. 3); the disposition of food in the body (Chhând. vi. 5); the process of sleep and dreams (Brh. ii. 1. 16 ff., iv. 3. 7 ff.; Chhând. iv. 3. 3); and the process of death (Brh. iii. 2. 11 ff.). All these statements are, however, connected with the theory of the 'vital breaths,' and appear to be entirely speculative.

With regard to the origin of disease may be noted the power of a curse to produce bodily ailments implied in the threat, 'thy head shall burst' (Brh. iii. 7. 1, 9. 26; Chhând. i. 8. 8); the statement (Brh. iv. 3. 15) that the evil caused by waking a man while his spirit is abroad in dreams is hard to cure; and the mention (Brh. iii. 3. 1, 7. 1) of women possessed by *gandharvas*. Sickness is incidentally mentioned (Brh. iv. 3. 36, v. 11. 1; Chhând. iv. 10. 3, vi. 15. 1, vii. 26. 2, viii. 4. 2, 6. 4). The itch (*pāman*) is the only disease specifically mentioned; and Raikva's scratching it off under a cart (Chhând. iv. 1. 8) is probably a method of cure to be associated with the cases of transference cited above.

The full term of life is often promised as a reward for certain knowledge (Brh. i. 2. 7, ii. 1. 11 f.; Chhând. ii. 11 ff., iv. 11 ff.); an *āyusya*-ceremony is also mentioned (Brh. vi. 4. 25). In Chhând. iii. 16 are contained directions for the cure of any disease, by following which one may live 116 years.

A number of factors combine to prevent diseases and their treatment from figuring to a great extent in the *Śrauta* ritual. All connected with the sacrifice must be in good health: an animal victim must be free from blemishes, among which certain diseases (cf. J. Schwab, *Das altindische Thieropfer*, p. xviii) are included. If, after the selection of the horse for the *Āśvamedha* (q.v.), diseases develop in it during the year that must elapse before its sacrifice, an expiatory sacrifice is required, which varies (cf. A. Hillebrandt, *Ritual-litteratur*, p. 150) according to the disease. Bodily ailments are also sufficient to prevent a priest from being chosen to officiate at a sacrifice (cf. A. Weber, *Indische Studien*, 1868, x. 145 ff.); and it is expressly stated (*Āśvalāyana Gṛhya Sūtra* i. 23. 20) that the priest must refuse to officiate for a *yajamāna* who is suffering from a disease. Under these circumstances it is but natural that the possibility of sickness should receive scant consideration except in so far as it is subsumed under prayers for long life and the exorcism of demons. This tendency must have been helped by the popular origin of the medical charms. In spite of this origin, they passed, as did everything, under the influence of the priesthood; but in the main they were more adapted to incorporation in the simpler form of the *Gṛhya* rites, which presented the further advantage of not bringing the diseased (i.e. demon-possessed) person into a contact with the priests that might prove dangerous for them. Exceptional situations, of course, occur: *soma*-drunkenness is a sacrificial sin, and must be healed by a sacrifice; or, as at the *pindapūtrīyajña*, the lives of the participants may be exposed to special

dangers against which precautions must be taken. But an examination of some of the *Śrauta* rites will show (cf. what was said of the *mantras* of the *Vājasaneyi Samhitā* above) that these are primarily concerned with the securing of wealth, progeny, and triumph over enemies, much more than with health, except as it is implied in prayers for protection and long life couched in the most general terms. Secondly, however, the sacrifice may be adapted to the securing of various desires. Among these the cure of disease figures to a greater extent, though still overshadowed by other wishes.

In the ritual of the New and Full Moon sacrifice (cf. A. Hillebrandt, *Das altind. Neu- und Vollmondsopfer*, Jena, 1880) there is no allusion to the subject. In the animal sacrifice it may be noted that among the wishes that determine the choice of the tree for the *yūpa* there is none closer to our purpose (cf. Schwab, *op. cit.* p. 2) than *vīryakāma* and *chakṣuṣkāma* (cf. also the wishes that determine the length of the post in *Satapatha Brāhmaṇa*, xi. 4. 7. 1, and *Taittirīya Samhitā* vi. 3. 3. 5-6). At the *mārjana* (purification) is employed (cf. p. 122) a verse which has its parallel in a remedial charm (Atharv. vi. 96. 2). The connexion between the two uses is due to the connexion between sin and disease. There is a colourless prayer for long life at the offering of *pṛṣadājya* to Vanaspati (cf. p. 147), and the prayer after the last *upayāja* (p. 155) to the waters and plants is for spirit in one's heart, a soft skin, a son, and a grandson. The prayer to Varuna at the hiding of the spit (p. 162) is found also in a cure for dropsy (Atharv. vii. 93. 2), and the place required is somewhat similar in both rituals. The final worship of the *yūpa* (p. 164) also contains a prayer for long life. This sacrifice, however, possesses greater interest for anatomy on account of the details incidental to the cutting up of the animal (cf. p. 126 ff.).

At the *pindapūtrīyajña* prayers for long life also occur (cf. W. Caland, *Altindischer Ahnencult*, Leyden, 1893, pp. 7 and 10). More interesting are the attempts to call back the spirit after its communion with the *manes* (cf. above, and Caland, pp. 11 f., 178 ff., 243, and the statements that the leavings of this offering have medicinal effect, p. 191).

Of *soma*-sacrifices, the most interesting, the *Sautrāmanī*, has been treated above. The *Rājasūya* contains, among its preparatory ceremonies, a number that served originally for the cure of diseases, which A. Weber (*Über die Königsweihe, den Rājasūya*, p. 5) rightly takes as an indication of the fact that this sacrifice has been built up on the basis of simpler popular practices. Thus *Maitrāyaṇī Samhitā* iv. 3. 1 has a ceremony against *kṣetriya*, including a sacrifice upon an ant-hill. *Kātyāyana ŚS* xv. 1. 23 states that the *pañcha-vāṭīya* is a cure for disease, and xv. 3. 39 that the *charu* for *Soma-Rudra* is a cure for leprosy. Prayers for long life are found (*Kāt. ŚS* xv. 5. 22; cf. *Sat. Brāh.* v. 4. 1. 1), also at anointing of kings (Weber, p. 49), and while touching a gold piece worth 100 *raṭtikā* (*Kāt. ŚS* xv. 6. 32). The recitation of the *Sunahṣepa*-legend also forms part of this ceremony (cf. Weber, p. 49 ff.), for the purpose of releasing the king from the fetters of Varuṇa. The beating of the king may originally have been exorcistic, as he is assured that the beating leads him beyond death. At the *puruṣamedha* also a portion of the ceremony is (*Sāṅkhāyana ŚS* xvi. 13. 3) or may be (*Vaitāna ŚS* xxxviii. 1) devoted to the cure of the *yajamāna*.

By certain modifications a *Śrauta* sacrifice may be employed for the attainment of a special wish. The parallelism of these *kāmyeṣṭajayajñā* with Atharvan charms has been pointed out by Caland

(*Altindisches Zauberritual*, Amsterdam, 1900, p. viii). An idea of the range of the wishes sought may be obtained from such lists as *Kauṣītaki Brāhmaṇa* iv. containing twelve modifications of the New and Full Moon Sacrifice, of which none is intended for the cure of disease; or the much longer list of *Taittirīya Saṃhitā* ii. 1. 1. 1-ii. 4. 14. 5. In this are included sacrifices for one 'long ill' (*jyogāmayāvin*) that will make him live 'even if his spirit is gone' (ii. 1. 1. 3; 2. 7; 9. 3 [release from Varuna's fetter]; ii. 4. 2; 10. 4; 3. 11. 1, cf. also iii. 4. 9. 3); for one 'seized by Varuna' or for release from Varuna's fetter (ii. 1. 2. 1; 2. 5. 1; 3. 12. 1; 13. 1); for one who wishes to live his full term of life (ii. 2. 3. 2); for one who fears death (ii. 3. 2. 1); or in case cattle or men are dying (ii. 2. 2. 3); for one wishing virility (ii. 3. 7. 2) or power of his senses (ii. 1. 6. 2; 2. 5. 4; 3. 7. 2); for one wishing sight (ii. 2. 4. 3; 9. 3; 3. 8. 1 [even though blind he sees]); for one in fear of impotence (ii. 3. 3. 4); for one in fear of skin-disease (ii. 1. 4. 3; 2. 10. 2); for one who vomits soma (ii. 3. 2. 6); for one whose 'mind is slain, who is an evil to himself' (ii. 2. 8. 3 [for insanity, cf. also iii. 4. 8. 4]); for one who has been suffering long from an unknown disease [cf. *ajñāta-yakṣma* above] (ii. 1. 6. 5); for one suffering from *pāpayakṣma* (ii. 3. 5, containing the mythical account of the origin of *pāpayakṣma*, *rājayakṣma*, and *jāyanya* [cf. ii. 5. 6. 4], and the statement that for this purpose the sacrifice must be offered at the new moon in order that the sacrificer may fill out with it).

In the *Gṛhya*-rites the phenomena of disease appear more frequently, though still treated in a general fashion which contrasts unfavourably with the details of the Atharva. Sickness is a sufficient excuse for sleep at sunrise or sunset (*Āśvalāyana* GS iii. 7. 1-2), and disqualifies a *yajamāna* (ib. i. 23. 20); bodily pain also stops the recitation of the Veda (*Sāṅkhāyana* GS iv. 7. 38). At the *upanayana*, Agni is invoked as the physician and maker of remedies (*Hiranyakeśin* GS i. 2. 18, cf. Atharv. v. 29. 1). At the *Srāddha* also prayers for long life are employed (cf. Caland, pp. 26 and 43), and, according to *Hiranyakeśin* ii. 12. 9, the sacrificer, if over fifty, offers to the *pitṛs* some of his hair, with the request that they take nothing more. The reason is that he feels he is now on the down grade and desires to prolong his life as much as possible (other interpretations in Caland, p. 177). The prevention of disease and sorcery may also be attained, according to *Gobhila* GS iv. 6. 2, by the daily repetition of a formula. The *Āgrayana* also, especially in its presentation in *Sāṅkhāyana* GS iii. 8, seems to be a rite to render the new food fit for use by driving out any demons that may be lurking in it (cf. the *Āgrayana* Kāmyeṣṭi for an *annādyakāma* in *Kauṣītaki Brāhmaṇa* iv. 12). As a panacea *Sāṅkhāyana* GS v. 6. 1-2 prescribes an oblation of rice-grains and *gavedhukā*-grass (*Coix barbata*) with Rigv. i. 114; similarly *Āśval.* GS iii. 6. 3-4 six oblations of boiled rice with Rigv. x. 161 (cf. the directions for protection of the embryo in *Sāṅkh.* GS i. 21). Another way of securing health (*Āśval.* GS iv. 1. 1) is for an *āhitāgni* to leave the village when he is sick; the sacred fires will desire to return, and will consequently grant him health. This is clearly an adaptation of a popular practice.

Of special diseases: *Pāraskara* GS iii. 6 contains an interesting cure of headache by rubbing, while reciting a verse parallel with Rigv. x. 163. 1 = Atharv. ii. 33. 1. This verse is also employed at *Āpastambīya* GS iii. 9. 10 for the rubbing of a sick woman with lotus leaves and roots. When the pain is confined to one side of the head, a different formula is used, the wording of which suggests the ascrip-

tion of the pain to worms. An elaborate cure for epilepsy, conceived as due to the attack of a dog-demon upon a child, is described (*Hiranyakeśin* GS ii. 2. 7. 1; *Āp.* GS vii. 18. 1; *Pāras.* GS i. 16. 24). With it may be compared the exorcism of the *Vināyaka* in *Mānava* GS ii. 14, giving many details of the symptoms (including dreams) and of the cure. An attempt to secure a child from all diseases (*ḷṣetṛiya* is particularly mentioned) is found at the *medhājanana* (*Hir.* GS ii. 3. 10; *Āp.* GS vi. 15. 4). For snake bites, cf. *Khādīra* GS iv. 4. 1 = *Gobh.* GS iv. 9. 16; the ceremony consists merely in sprinkling with water while muttering a verse. Worms are similarly treated in *Kh.* GS iv. 4. 3 = *Gobh.* GS iv. 9. 19, while the following *sūtras* provide for their treatment in cows; cf. also *Taittirīya Āraṇyaka* iv. 36. 1; *Āp.* SS xv. 19. 5. Other cures for cattle are *Āśval.* GS iv. 8. 40 (the cows are led through the smoke of a fire in which an oblation has been made; cf. *Hir.* GS ii. 3. 8. 10, and *Kh.* GS iv. 3. 13).

The *Rigvidhāna* deals frequently in cures for diseases, but not in a way to call for special comment (cf. i. 2. 5; 17. 8; 17. 9; 18. 4; 19. 1; 19. 3; 20. 3; 23. 7; 24. 3; 25. 5; 27. 1; 28. 4; 29. 2; 30. 4-31. 2; ii. 1. 3; 20. 3; 25. 10, 11; 26. 3; 33. 1-3; 34. 5; iii. 3. 2; 7. 6; 11. 3; 18. 5; iv. 1. 1-3; 9. 4-7; 16. 1; 19. 3-5).

The *Sāmavidhāna Brāhmaṇa* has among its *kāmyāni* a series of ceremonies of interest: when the children of one's wife die young (ii. 2. 1; the ceremony is described in art. CHARMS AND AMULETS [Vedic]); when one is seized by a demon (ii. 2. 2); for any disease (ii. 2. 3); in case of pain in a limb (ii. 3. 1, 2); for protection from snakes (ii. 3. 3).

LITERATURE.—In addition to the works cited, cf. P. Cordier, *Étude sur la médecine hindoue*, Paris, 1894 (additional passages from Upaniṣads); V. Henry, *La Magie dans l'Inde antique*, Paris, 1904, pp. 178-205; W. Caland, *Altindisches Zauberritual: Probe einer Uebersetzung der wichtigsten Theile des Kauṣika Sūtra*, Amsterdam, 1900, pp. 67-107; M. Bloomfield, 'Hymns of the Atharva-veda,' *SBE*, vol. xlii, pp. 1-48 and commentary thereto, also 'The Atharva-veda,' in *GIAP* ii. 1, B. Strassburg, 1899, pp. 58-63 (with copious references to the earlier works on the subject). Since the writing of this article, the *kāmyā isthayaḥ* have received a full treatment in W. Caland, *Altindische Zauberei: Darstellung der altind. 'Wunschopfer'*, Amsterdam, 1908. G. M. BOLLING.

DISGUST is primarily a feeling in regard to the physically repulsive, and is therefore accompanied by actual or reproduced organic sensations. In 'moral' disgust, these sensations are suggested by analogy. The emotion of repugnance, which appears in disgust, abhorrence, detestation, and horror, is a particular feeling-attitude,¹ or disposition of the self, towards an object which stands in a special relation to the nature of the individual. The object which arouses the emotion is not the hostile as such, or the merely harmful; it is the unnatural—that which involves a perversion of nature. In other words, it is at variance with that primary fitness of things which is based on the essential nature of things. This is evident in the case of the morally repulsive. The abnormal prominence of the animal nature, desires which lead to misuse of functions, desires of any kind raised to an unnatural pitch, all arouse the emotion of repugnance. The same principle is at work when merely physical objects are concerned. Objects of this kind are 'natural' in their proper place, but they may be misplaced. This is the *rationale* of all physical repugnance. The characteristic expression of this emotion in conduct is the avoidance of all relations with the repugnant object. It thus serves to protect, not so much the life of the individual, as his distinctive nature.

LITERATURE.—C. Darwin, *Expression of the Emotions*, Lond. 1872, ch. xi.; Th. Ribot, *The Psychology of the Emotions*, Eng. tr. do. 1897, pt. ii. ch. i. D. IRONS.

¹ D. Irons, *The Psychology of Ethics*, Edin. and Lond. 1903, ch. i.